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A NEW COLOR REACTION FOR VANILLIN.

By Frank X. Moerk, Ph.G.

Contribution from the Chemical Laboratory of the Philadelphia College of Pharmacy, No. 95.

Read at the Pharmaceutical Meeting of the Philadelphia College of Pharmacy, October 20, 1891.

In the various reference books on organic chemistry, there is to be found especially one color reaction for vanillin, namely, a violet-blue color, with ferric chloride.

Some time ago, I had occasion to examine a vanilla substitute which proved to be a mixture of vanillin and coumarin and experienced some difficulty in obtaining the above color reaction, caused by using too much ferric chloride solution, and this solution containing free hydrochloric acid; by using a very dilute solution of ferric chloride containing no free hydrochloric acid, the test succeeded with vanillin solutions 1 : 2,000, in which dilution a faint but noticeable violet-blue color results.

Thinking that the test could be made more easily by using a ferrous solution and oxidizing this with bromine water, I was surprised at the intense bluish-green color resulting. The method of applying the test was to add to the aqueous vanillin solution a few drops of a 1 per cent. ferrous sulphate solution and then the bromine water, drop by drop; in very dilute vanillin solutions a single drop of bromine water is sufficient, in more concentrated solutions the color deepens with the addition of more bromine water until the maximum intensity is reached, when more bromine water causes a yellowish clearing of the bluish-green test. If the bromine water be added

rapidly drop by drop, until the yellow coloration results, and the test set aside for a few minutes, the original bluish-green color reappears with full intensity.

If too much bromine water be added at once, or if it be added slowly until the yellow color results, the bluish-green color will not reappear.

The test succeeds in solutions of vanillin 1 : 100,000 and then is more easily recognized than is the ferric chloride test with vanillin solutions 1 : 2,000.

It is also interesting to note that if to the vanillin solution be added a little of a dilute ferric chloride solution and then a drop of bromine water, a much more intense color is produced, but in this case a yellowish green; this color is discernible in vanillin solutions 1 : 50,000.

The presence of free acid does not interfere much with the intensity of these colors, and hence, the test would seem to depend upon the action of bromine upon vanillin and then the further action of this compound upon the salts of iron, especially ferrous salts.

That this is the case can be proven by carrying out the test in a manner which will enable one to detect one part vanillin in 200,000 parts of solution:

To the vanillin solution is added a drop of bromine water or sufficient to impart the odor of bromine, and then a freshly prepared solution of ferrous sulphate is carefully added in slight excess, that is, a drop or two are added after the bromine odor has disappeared. Coumarin not giving this color reaction, it can be used to estimate approximately the vanillin in mixtures of vanillin and coumarin as they are used in the vanilla substitutes; to do this the same weights of vanillin and the substitute (about 50 milligrams) are dissolved each in 100 cc. of water; of this solution 5 cc. are taken, diluted with about 10 cc. of water, and bromine water added drop by drop until, after agitation, the bromine odor is permanent, then add of a freshly prepared 1 per cent. ferrous sulphate solution until the bluish-green color no longer intensifies; lastly, dilute with water the two tests until they are of the same tint.

A comparison of the two volumes will give the percentage of vanillin in the substitute, if, for instance, the vanillin solution measures 75 cc. and the substitute solution 55 cc., then

$$75 : 50 :: 100 : x = 66.66 \text{ per cent.}$$

There are a few other color reactions for vanillin which I find mentioned in "Die Farben-reactionen der Kohlenstoff-verbindungen," by Dr. Emil Nickel, but which I did not have an opportunity to compare with the above:

(1) Millon's reagent (a solution containing both mercurous and mercuric nitrates with some free nitrous acid) gives a reddish violet color.

(2) Mercuric chloride solution containing some potassium nitrite on boiling gives a fine violet color.

(3) Zinc sulphate and potassium nitrite in solution give a yellow coloration.

(4) Phloroglucin and hydrochloric acid produce a red color.

(5) Aniline sulphate produces a yellow color (not very delicate).

(6) Pyrrol with dilute sulphuric acid (1 : 4) produces a cherry red color.

(7) Indol with dilute sulphuric acid (1 : 4) produces a cherry red color.

(8) Carbazol with dilute sulphuric acid (1 : 1) produces a blue or bluish violet color.

(9) Fröhde's reagent (molybdate of sodium dissolved in concentrated sulphuric acid) produces a blue or green color.

THE ROOT BARK OF CELASTRUS SCANDENS.

By Jacob Hoch, Ph.G.

From an Inaugural Essay presented to the Philadelphia College of Pharmacy.

The root bark was collected by the author in Montgomery County, Pennsylvania, and on drying at 100° C., lost 12·2 per cent. of moisture. A distillate was prepared from the bark by cohobation, and on examination, showed the absence of volatile constituents.

The powdered bark, treated with petroleum-benzin, yielded 5·5 per cent. of an orange-red, stiff, elastic mass. Water has no effect upon it, but alcohol dissolves from it a deep orange-red brittle substance which is inodorous, has (in alcoholic solution) an acid reaction, is soluble in ether, and yields with alkalies deep-brown solutions. The body insoluble in alcohol is nearly colorless, elastic and soluble in benzin and chloroform.

The bark exhausted by benzin, yielded to ether a hard resinous body, soluble in alcohol and in strong alkalies with a brown color.

Treatment with alcohol resulted in a tincture, which on evapora-

tion left a dark-brown extract, partly soluble in water. The aqueous solution gave with ferric chloride a greenish-black color, and after the removal of the tannin by means of gelatin, yielded with basic lead acetate a yellowish-white precipitate, from which a light-yellow extractive mass of an acid reaction was isolated. The aqueous solution also reacted with Fehling's solution, indicating the presence of glucose. The alcoholic extract insoluble in water was a brownish resinous substance.

The bark, exhausted as stated above, yielded to cold water some gummy matter, and to boiling water some pectin compounds and starch, the latter indicated by the blue color with iodine solution.

Experiments made in search of an alkaloid or glucoside had negative results. The ash obtained from the dried bark amounts to 7½ per cent.

The organic constituents determined by these experiments, are orange-red coloring matter, several resins, tannin, vegetable acid, glucose and starch.

See also analysis of Celastrus scandens, by C. H. Bernhard, in AMERICAN JOURNAL OF PHARMACY, 1882, pp. 1–5.

PURSHIA.

BY DR. V. HAVARD, Surgeon U. S. A.

Read at the Pharmaceutical Meeting of the Philadelphia College of Phafmacy, October 20, 1891.

Purshia tridentata, DC. This monotypic genus of the order Rosaceæ (and named in honor of Pursh, one of our most successful botanical pioneers) is characterized by solitary carpels becoming dry akenes, exserted, conical-pointed and minutely grooved, and containing a dark brown seed, oblong-obovate, about three lines long, without albumen.

A diffusely-branched shrub, 3 to 5 feet high, with small fascicled leaves cuneate-obovate, 3-lobed at the apex, and solitary flowers, terminal on the short branches, the five yellow petals exceeding the calyx lobes.

Common throughout the Rocky Mountain region, covering foothills and slopes, from Arizona and New Mexico to the British boundary, and westward to the Sierra Nevada. "Almost the only shrub to be seen through an immense tract of barren soil from the head

sources of the Missouri to the falls of the Columbia, and from the 38° to the 48° of N. latitude." (Douglas.)

Between the thin and membranous epidermis of the seed and the opaque yellowish inner coat is a granulated resinous pulp, half a line thick, deep purple in color, and intensely and persistently bitter, which deserves attention either as a coloring or medicinal substance. It imparts its bitterness to water and alcohol without discoloring either menstruum, one seed being sufficient to render a tumblerful of water undrinkable. The bitter principle is apparently distinct from the coloring matter.

NOTE.—The small amount of material sent with the above description precluded a satisfactory examination. Alcohol removed the bitter principle with some fat, and in attempting to separate the latter by agitating the aqueous acidified solution with ether the bitter principle was also removed; this would almost exclude it from being an alkaloid, but further tests could not be tried to decide this. It gave no reactions indicating a glucoside. It is hoped that more of the material will be sent, on which to make a further examination. —H. TRIMBLE.

SOME INDIAN FOOD PLANTS—THE YAMP.

VI.—*Carum Gairdneri*, Bentham and Hooker.

BY HENRY TRIMBLE.

Contribution from the Chemical Laboratory of the Philadelphia College of Pharmacy. No. 96.

Read at the Pharmaceutical Meeting, October 20.

This like the preceding food plants described in this Journal was received from Dr. V. Havard, U. S. Army Surgeon, at Fort Russell, Wyoming. He furnished with the material the following report:

" *Carum Gairdneri*, Benth. and Hook. (Yamp or Yampah, Yep or Yepah) of the Parsley Family (Umbelliferæ). Tall, erect, biennial herb, 1 to 4 feet high, rather smooth, with few pinnate leaves of 3 to 7 entire leaflets, and white flowers; the involucre of a single leaflet and the involucels of several bracts.

" Found mostly on low timbered bottoms from the western fork of Laramie River, Wyo., apparently its most eastern habitat, through the Rocky Mountains to Oregon and Washington; southward it extends to Utah, Nevada and South California. It gives

its name to several streams of which the Yampah, or Little Snake River, is the largest.

"The tuberous roots are in close clusters of 2 to 5, fusiform or conical, about an inch long and half an inch or less thick; they are covered with very thin brownish skin which, when scraped off, leaves an homogeneous, pure white, farinaceous substance. Eaten raw they have a delicious aromatic flavor without any bitterness or astringency, and with the blended taste of the nut and the parsnip.

"Among the Indians of the Rocky Mountains and those of the Snake River, more particularly among the Shoshonees, in whose former territory it is very abundant, this root was, and still is, considered one of the very best of the native esculent roots, either raw or cooked. Bears and pigs are very fond of it, the latter often tearing up large tracts of ground in their search for it.

"Several species of Peucedanum have larger edible tubers, but this plant yields the most delicately flavored root of our native umbellifers. There is little doubt that, if susceptible of enlargement by cultivation, it would soon become a favorite in the vegetable garden.

"Another species of Carum (*C. Kellogii,* Gray) is found in Central California, near the coast. It is a rather stouter plant, with larger flowers and fruit, and ternate or biternate leaves, cut and divided. The roots are likewise tuberous and clustered, probably larger, and used as food by the Indians. This species should also be tested in cultivation.

"To this same genus belong the caraway and the parsley of our gardens, both plants having more or less fleshy, pleasantly flavored roots, although but little used."

The tubers, when first received, were quite moist, having evidently not been out of the ground very long. They were allowed to become air dry and then submitted to a proximate analysis, with the following results:

	Per Cent.
Fat, wax and caoutchouc,	1·03
Resin, soluble in stronger ether,	·53
Saccharose,	10·98
Glucose,	5·32
Mucilage and Albuminoids,	29·20
Pararabin, etc.,	2·75

	Per Cent.
Starch,	5·35
Moisture,	14·66
Ash,	3·62
Insoluble and undetermined,	26·56
	100·00

This food is remarkable for the large proportion of cane sugar it contains. The alcoholic extract deposited clear white crystals of it on standing.

THE TRADE IN GINGER AND ITS ECONOMIC USES.

By P. L. Simmonds, F.L.S.

As ginger enters so largely into consumption for pleasant popular beverages and for other purposes in this country, some short account of the sources of supply, and the commerce in this spice, may not be without interest.

The manufacture of ginger beer and ginger ale form a large portion of the mineral water trade in the kingdom; indeed, some makers have acquired a special reputation for their production. Besides the large number of fermented and aërated ginger beers consumed at home, a good deal of ginger ale is shipped in glass bottles, from Belfast especially, to the United States. About 16,000 packages or casks are so exported annually, for it has become a fashionable beverage in America among all classes.

According to the American official returns, the imports in the two years ending June, were as follows (the duty being 20 per cent.):

	1888. Dozen bottles.	1889. Dozen bottles.
Ginger ale and beer,	231,721	261,828
Ginger cordial,	—	262
Preserved ginger (35 per cent. duty) value,	$14,289	$2,670
Raw ginger (duty free),	34,194 cwt.	27,718 cwt.

The value of the ginger ale and beer imported there was in 1887, $153,376; in 1888, $126,987; and in 1889, $92,001. The manufacture of ginger ale seems to have been commenced there also, for last year 3,512 dozen quarts were sent away from New York and New Orleans, besides what was locally consumed.

The number of uses to which ginger is applied besides as a spice, confection and medicine, are many; for instance, we have gingerade, ginger ale, ginger beer, ginger brandy, gingerbread, ginger

champagne, ginger cordial, ginger essence, ginger lozenges and ginger wine. We have also the gingerbread tree (the Doum Palm), which, though not a producer of the spice, bears a fruit, the husk of which is brown and mealy, and has both the taste and color of gingerbread, hence one of its common names.

On the Continent ginger is less used and appreciated than with us. Good ginger should be fresh, dry, heavy, not brittle, of a reddish-gray exterior. The interior, when broken, should be resinous and of a pungent taste. The finest bleached Jamaica ginger is always in demand at good prices, after which come Cochin and African bleached. Soluble essences of ginger are required for making good ginger beer, and Belfast and American ginger ales. There are aërated and fermented ginger beers; the best unbleached Jamaica ginger, well bruised, being used for the latter. Ginger is also used for a kind of cordial and champagne. It is administered medicinally as a tonic anti-spasmodic and carminative, in the form of powder, tincture and syrup. Its odor is due to an essential oil, and its hot taste to a peculiar resin. Ginger enters into almost every compound of the spice class, and is one of the most useful and least injurious members. It is generally considered as an aromatic, and less pungent and heating to the system than might be expected from its effects upon the organ of taste.

Ginger is cultivated in many parts of the world for local use, but only in a few localities on an extensive scale, for shipment, to supply commercial wants. Of this well-known flavoring condiment several varieties are common in trade, distinguished by their quality, place of growth, etc. Gingers are either coated with the shrivelled rind, or scraped by having it removed. Ginger is sometimes bleached by chloride of lime, or whitewashed with lime and water. The dried rhizomes are called by the dealers "races," or hands. The younger portions are amylaceous, and the older hard and resinous. Our supplies are drawn chiefly from the East and West Indies and Africa; the imports average about 70,000 cwts. per annum, of which 40,000 cwts. are consumed in Great Britain. The Jamaica ginger is considered the best, being pale and uncoated. Cochin ginger resembles it, but is of a pale brownish tint externally.

The total imports of ginger in the United Kingdom increased from 4,390 cwts. in 1831 to 63,511 cwts. in 1889, and the total consumption from 4,788 cwts. in 1831 to 44,307 cwts. in 1862, and to 39,681 cwts.

in 1889. The quantity retained for consumption is ascertained by deducting the re-exports, but of course there is always some stock in hand.

Ginger is extensively diffused throughout the islands of the Indian Archipelago, being indigenous to the East, and of pretty general use among the natives. It is, however, inferior in quality to that of Malabar or Bengal. Ginger is a good deal grown in China, and largely used in its fresh state as a condiment and also in medicine. Some small quantity is exported dried, but it is black and hard, and not much appreciated in commerce. In the young state the rhizomes are fleshy and slightly aromatic, and they are then used as preserves, or prepared in syrup. In a more advanced stage the aroma is fully developed, the texture is more woody, and they become fit for ordinary commercial ginger. The inferior sorts, when dried after immersion in hot water, form black ginger. The best roots are scraped, washed, and, after being dried in the sun, receive the name of white ginger. The East Indian and African are coated or limed gingers. The West Indian ginger is superior in quality to that of the East because more care is paid to the culture and drying; but the production is much smaller, and hence the trade is of less importance to commerce. Ginger is imported in bags and barrels weighing a little over 1 cwt. each.

At the close of the last century Barbadoes, Hayti and other West Indian Islands, cultivated ginger largely. Barbadoes then exported 21,000 cwts. But Jamaica alone now gives any attention to the culture, and even there the production has fallen off about one-half, and the common East Indian is flooding the market. In 1831 the bulk of what was received was from the West Indies, as India sent less than 1,000 cwts. then. In 1841, however, the East had surpassed the West by 1,000 cwts. Last year of 63,500 cwts. imported, India sent 53,500 cwts., Jamaica 5,900 cwts., and West Africa, 2,600 cwts. Still the production for export is falling off in India, judging by the exports, in the last few years.

The ginger plant is extensively cultivated in British India, from the Himalayas to Cape Comorin. In the Himalayas it is successfully reared at elevations of 4,000 or 5,000 ft., requiring, however, a moist soil. The Malabar ginger, exported from Calicut, is the produce of the district of Shernaad, situated to the south of Calicut. In the Dacca district the natives cleanse the roots in boiling lime

water, which probably injures much of the fragrant pungency, whereas in Jamaica they use simply plain water.

In order to dry ginger into what is called "sonth" in India, that is to enable it to keep, the fresh roots are put into a basket, which is suspended by a rope, and then two men, one on each side, pull it to and fro between them by a cord attached, and thus shake the roots in the basket; this process is carried on for two hours every day for three days. After this the roots are dried in the sun for eight days, and again shaken in the basket; the object of the shaking being to take off the outer scales and skin of the roots. Two days further drying completes the process, and the ginger sells at about a rupee, or 2 shillings, for 6 or 8 pounds. The value of the East Indian ginger exported went on increasing from about £63,000 (44,457 cwts.), in 1881, to over £199,000 (133,280 cwts.) in 1887; but in the last three years it has retrograded, having fallen to £70,398 (61,774 cwt.) in the financial year ending March, 1890.

There are, of course, fluctuations in the export, but the general increase of production has been very great in the last twenty years, the shipments having more than trebled. In 1871 England only received from the East Indies 13,014 cwts., valued at £28,200; last year 53,498 cwts. were received.

Passing now to the West Indian production the crop in Jamaica varies; sometimes over 320 acres are under ginger, in other years only 130 acres.

In 1738 so widely was the culture of this root diffused in Jamaica, that over 21,000 cwts. were shipped. In 1832, this quantity was again reached, but of late years the exports have been much smaller. In 1875 and 1876 there was a large export, averaging 13,400 cwts. Since then the exports and value have fluctuated from 5,932 cwts. and £11,952 in 1882, to 7,945 cwts. and £22,246 in 1880, and to 12,313 cwts. and £20,169 in 1885.

The sets used for planting are the small knots or fingers broken off the original root, as not worth the scraping or keeping. It throws out a pedicle or foot-stalk in the course of the second or third week. From my experience as a planter in Jamaica, the crop is got in in December and January, when the stalks begin to wither. The average yield may be taken to be from 1,500 to 2,000 lbs. per acre, but sometimes a much heavier crop is obtained.

The third producing district for ginger is the West African coast,

where it is principally grown at Sierra Leone. About half that produced comes to England, and the other half goes to America. The value of that exported in 1868 was £18,917, and in 1869, £14,008.

Lastly, young ginger is candied and preserved to a considerable extent in the East, and comes into commerce under the section of "succades." The quantity imported into England from India and China ranges from 300,000 to 600,000 lbs., of the value of £11,000 to £25,000. The mode of preserving it is to steep the rhizomes in vats of water for several days, changing the water once. When taken out it is spread on tables and well pricked or pierced with bodkins. The rhizomes are then boiled in a copper caldron, then steeped for two days and nights in a vat with a mixture of water and rice flour. After this they are washed with a solution of lime, then boiled with an equal weight of sugar, and a little white of egg is added to clarify.

After the ginger has been boiled a second time it is put in glazed jars of pottery, holding 1 pound, 3 pounds or 6 pounds, and covered with syrup. The syrup is changed two or three times, and then they are shipped in cases holding six jars. The quality called "Mandarin" is put up in barrels.

The syrup must not be applied hot in the first instance or the ginger will shrink and shrivel. In India the weak syrups after being poured off are not used again, but are fermented, and make a pleasant drink. The process of candying is simply that of drying the ginger preserved as above, a little dry powdered sugar being used to aid the drying.

The ginger that comes in from China dry-coated with sugar, is sent out in small squares of zinc.

GINGER AND ITS OLEORESIN.

By Samuel Jacob Riegel, Ph.D.

From an inaugural essay presented to the Philadelphia College of Pharmacy.

This subject was chosen for investigation with the view of ascertaining whether some other solvent than ether would satisfactorily extract the properties, and could be used in preparing the official oleoresin, and to determine the quantity obtainable from different varieties.

First.—1,000 grs. of unbleached Jamaica ginger were reduced to

No. 50 powder and exhausted with alcohol; the tincture thus obtained was evaporated at a moderate heat, and yielded 50 grs., or 5 per cent. of a clear, dark brown viscid liquid, closely resembling the pharmacopœial oleoresin; it was perfectly soluble in stronger and commercial ether and in chloroform, but only partially soluble in benzin. The residuary powder was dried and percolated with benzin, which did not extract anything.

Second.—500 grs. of unbleached Jamaica ginger were percolated with benzin, which, however, did not extract all the pungency. The residue was dried and exhausted with ether. The products, after evaporating the benzin and ether respectively, were similiar in physical properties, and equally pungent. The sum of the two represented 5 per cent. of the drug; the benzin extracted about half.

Third.—1,000 grs. of unbleached Jamaica ginger were exhausted with alcohol and percolated with ether. The alcohol extracted, as before, 5 per cent. of oleoresin, but the ether extracted nothing. The oleoresin was then dissolved in about 2 drachms of alcohol and shaken with 12 oz. of benzin in portions of 2 oz. at a time. The benzin dissolved all but a small quantity, which was free from pungency and odor.

Fourth.—1,000 grs. of East India ginger, having the epidermis removed from the flat side, were exhausted with alcohol, and yielded 80 grs. or 8 per cent. of oleoresin very much darker than that obtained from Jamaica ginger, but quite as pungent. It also was perfectly and readily soluble in stronger and commercial ether and in chloroform, but only partially soluble in benzin. The residuary powder was percolated with ether, but without extracting anything.

Fifth.—1,000 grs. of E. India ginger were exhausted with Squibb's stronger ether, and on evaporating yielded 80 grs. or 8 per cent. of oleoresin. This was completely soluble in alcohol and chloroform. When dissolved in alcohol and shaken with benzin, it required a much larger quantity to wash out all the pungency, and the insoluble portion was larger in quantity than that from Jamaica ginger.

After these experiments were concluded a portion of the oleoresins (which had been mixed) was treated with wood alcohol. This dissolved the pungent principles much more readily than did benzin, and left a considerably larger quantity undissolved. The insoluble portion was of a very dark, reddish-brown color, of a soft consistence, and quite free from pungency, while the pungent portion was not so dark in color and was not solid, but very viscid.

Summary.—Jamaica ginger yielded 5 per cent. of oleoresin, which can be extracted with alcohol, ether or chloroform.

East India ginger yields 8 per cent. of oleoresin, which can also be extracted with the same solvents. The oleoresin obtained represents all the medicinal virtues of the drug, and consists of two portions, a thick, viscid liquid, which contains all the pungency in a high degree, and a soft, resinous solid free from pungency and odor. The pungent portion is soluble in benzin, but cannot be extracted from the drug with it.

This investigation would indicate that alcohol could be used instead of ether in preparing the official oleoresin.

BASHAM'S MIXTURE.

By F. W. Haussmann, Ph. G.

Read at the Pharmaceutical Meeting of the Phila. College of Pharmacy, October 20.

Few formulas of the present pharmacopœia have experienced as much adverse criticism from both pharmaceutical and medical standpoints as the Mistura Ferri et Ammonii Acetatis. Every pharmacist, in following out the officinal method, has doubtlessly experienced the same result, namely, instability of the mixture and gradual precipitation of the iron as oxyacetate. When freshly prepared, the mixture presents an attractive appearance, but on standing several days, especially in warm weather, or only partly filled bottles, the above change takes place. It is generally noticed, when bottles which contained it are presented for renewal, when the bottom and sides of the vial are stained by the iron.

While recommending recent preparation in a number of the officinal mixtures, the pharmacopœia neglects this necessary order in this instance, a rule which whenever possible should be observed.

The reason for this decomposition may be found in the insufficient amount of acetic acid ordered, also the general very dilute condition of the preparation. While perhaps not often called for in some localities, in others it is continually in demand, and the pharmacist, to save both time and labor, is compelled to keep a supply on hand. It is in such instances that the above disadvantage is mainly felt.

The suggestion has been made, in the necessity of keeping a "stock" on hand, to prepare a concentrated mixture, according to the pharmacopœia, with the omission of the 50 parts of water,

which was to be added at the time the mixture was dispensed. This "concentrated" mixture does, however, not last much longer than the finished article, precipitating in almost the same time.

An increased amount of acetic acid is, perhaps, the only remedy.

From a medical standpoint, the exceedingly slight amount of active ingredients is the main objection, and frequently physicians prescribe this valuable remedy extemporaneously. Others again, in prescribing it, specify "Old formula."

An older edition of the National Dispensatory gives a formula which yields a preparation in medicinal efficacy improved and in stability more perfect. It is nearly 3 times the strength of the now officinal article and, while not without fault, is better than the pharmacopœial preparation. The following is the formula:

Liq. ammon. acetatis,	℥ ivss
Ac. acetici dilut.,	ʒ i
Tinct. ferri chlorid.,	℥ ss
Tinct. aurant. cort,	℥ iss
Glycerini,	℥ ss

The "modus operandi" is similar to the one of the pharmacopœia. When prepared by this method the mixture will be of a deep brown, almost black color, due to the action of the iron upon the tincture of orange peel. If elixir of orange, U. S. P., or better a mixture of it with simple syrup, about equal parts, be substituted for the tincture, the preparation will be, though slightly darker, very similar in appearance to the freshly prepared officinal mixture. It does not precipitate, unless under certain conditions to be mentioned.

A sample, one and a half years old, has not shown any change as yet.

In preparing the mixture, a few points are to be observed, viz: (1) The solution of acetate of ammonium should be freshly prepared, care being taken that it is not too alkaline. This happens frequently, especially as is often the case when made by this method, if the carbonate of ammonia is left too long in contact with the acetic acid. If the second pharmacopœial method is followed, namely, mixture of a solution of carbonate of ammonia with the corresponding strength of acetic acid, more satisfactory results may be looked for. (2) In summer an increase of acetic acid often becomes necessary, as decomposition, especially in very hot weather

and particularly before a thunderstorm, frequently takes place. It manifests itself by the gradual darkening of the mixture, which soon becomes of a thickish consistence, with final, bulky precipitation. It becomes necessary to recommend to the consumer to keep the medicine in as cool a place as possible.

A change of this nature often gives rise to suspicion, and by previous information possible distrust may be avoided. In the selection of the material employed some care is also necessary.

The acetic acid must be strictly U. S. P., free from empyreumatic impurities. If the latter be present, on neutralization with the carbonate of ammonia, it will manifest itself both in odor and taste. Also, on the addition of tincture of iron, it will produce a considerably darker mixture. The same precaution may be observed in the ammonia salt, which is often of inferior quality.

In offering the substitute for the officinal Basham's Mixture, no new features are presented either in composition or method of preparation, merely slight alterations in an old and tried formula. But as improvement upon the pharmacopœial formula is a necessity, it may be worthy of consideration. It certainly has one advantage which the other does not possess, that of being stable.

GLEANINGS FROM THE GERMAN JOURNALS.

By Frank X. Moerk, Ph.G.

Kamala.—In a recent report issued by Cæsar and Loretz, the results of sifting commercial kamala, with the view of separating as much as possible the portions containing much mineral matter, are given; of the lots purified during the past two years the best one gave percentage results as follows: 55 per cent. of worthless impurities, as dirt, fruit and bark particles;

	12,	10,	3,	2 and	18	per cent.	purified kamala
containing	20,	16,	10,	7·5	6	"	ash.

The last lot that was purified yielded 58 per cent. of worthless impurities; and

	5,	10,	4,	8,	9 and	4	per cent.	purified kamala
yielding	40,	35,	24,	21,	14 "	12·5	"	ash

These results are confirmed by examinations of various commercial samples of kamala made during the last year.—*Apotheker Ztg.*, 1891, 495.

Bleaching of animal fats.—10 grams powdered potassium permanganate are dissolved in one half liter of water and mixed with 10 grams concentrated sulphuric acid, also diluted to half a liter; 40 kilos of fat are melted and agitated for five minutes with the above solution; by moderate heat the fat is kept liquefied so as to facilitate separation from the brown magma of hydrated manganese dioxide. Should the fat have a yellowish or brownish color (due to a little dissolved oxide of manganese) the addition of a few drops of sulphurous acid will cause decolorization owing to the reduction of the hydrated manganese dioxide and formation of manganous sulphate. The advantages claimed for this method are that neither the physical nor chemical properties of the fat are changed even if a much larger quantity of the permanganate be used. The method is especially recommended for the bleaching of tallow, lard and margarine.—Dr. A. Jolles and F. Wallenstein, *Ztschr. f. Nahrungsm. Unters. u. Hyg.*, 1891, 162.

Essential Oils.—After the introduction of the concentrated essential oils by Hänsel (*Am. Journ. Pharm.*, 1888, 451), it was hardly deemed possible to prepare oils of superior quality inasmuch as these oils represent the natural oils freed from the non-odorous terpenes; H. Hager in *Pharm. Post,* 1891, 807, acknowledges the receipt of some samples of volatile oils which proved upon comparison to have a finer flavor and to be even better than the oils from the first mentioned source; they are also more soluble in dilute alcohol. For these oils the name "Ætherische Grundœle" (fundamental essential oils) is used: in Latin, the term *Protoleum* or *Protolum* is suggested, as for instance Protoleum Carvi. The preparation of this class of oils is the secret of the manufacturing firm of Altmann & Vogel, in Cotta-Dresden.

Assay of Cinchona.—A comparative examination of three methods of assay gave the following results: (1) The method of Haubensak (*Am. Journ. Pharm.*, 1891), 2·975 per cent. and 2·995 per cent; (2) The method of Schmidt (Pharmacopœa Neerlandica), 2·2093 per cent.; and (3) The method of the Pharmacopœia Germanica III 2·035 per cent. and 2·360 per cent. The conclusions arrived at are that Haubensak's method is the best, not only because of the higher figures obtained, but also because of the purity of the weighed alkaloids, they being entirely soluble in acidulated water.—Wegmüller, *Schwz. Wochenschr. der Pharm.*, 1891, 363.

Secale cornutum.—By macerating 300 grm. powdered ergot deprived of oil with 1,500 grm. 5 per cent. sodium hydrate solution for 48 hours, straining, mixing 500 grm. filtrate with 1,000 cc. 90 per cent. alcohol, filtering off the precipitate, triturating it with 300 cc. alcohol acidulated with hydrochloric acid, filtering, washing the insoluble part with alcohol until the filtrate passed through colorless, and drying at 40–50° C., Dr. A. Voswinkel obtained 15·8 per cent. of a brown, amorphous, hygroscopic substance which he proved by hydrolysis to yield mannose; the body itself is a hemi-cellulose to which the name "mannan" is given. Sclerotic acid and scleromucin found by Dragendorff in ergot were prepared according to Dragendorff and proven to be identical with "mannan;" the yield of these substances was only 4·8 %, and this is explained by mannan being less soluble in water than in sodium hydrate solution. The physiological action of sclerotic acid is doubted by Voswinkel because of the fact that mannan is also a constituent of salep and of coffee. Mention is also made of the extract of ergot as prepared by the Pharm. Germ. III: Two parts of ergot are exhausted with two portions of water, the filtrates are united, evaporated to one part, and one part dilute alcohol added; it is claimed that the alcohol added is insufficient to precipitate all of the mannan, that by the use of three parts of alcohol this can be effected and that such an extract would give a clear solution with 65–70 per cent. alcohol and also would be more effective.—*Pharm. Centralhalle*, 1891, 531.

Sodium bicarbonate.—A recent process of manufacture is as follows: Heavy spar or barium sulphate is reduced by heating with coal to barium sulphide, this dissolved in water and mixed with sodium sulphate, whereby barium sulphate is precipitated and sodium sulphide remains in solution; by passing natural carbon dioxide through this solution sodium bicarbonate is formed with escape of hydrogen sulphide, which is then burnt with a limited supply producing water and sulphur.—*Pharm. Centralhalle*, 1891, 536.

Tooth-wash.—Thymol, 0·25; benzoic acid, 3·00; tincture of eucalyptus, 15·00; alcohol, 100·00; oil of gaultheria, 25 drops; dilute one teaspoonful with half a wineglassful of water.

Tooth-powder.—Precipitated chalk, 120; cinchona bark, 60; prepared oyster shells, 60; powdered myrrh, 35; and oil of pepper-

mint, 15 drops. These preparations are recommended by Prof. Miller for the care of the teeth.—*Pharm. Ztg.*, 1891, 587.

For the detection of hydrocyanic acid and soluble cyanides.—Hilger and Tamba distil in a current of carbon dioxide avoiding a higher temperature than 60° C.; in the presence of ferrocyanides and ferricyanides tartaric acid is first added, and then sodium bicarbonate to faint alkaline reaction before distilling. The distillates are tested for hydrocyanic acid by adding to them in a porcelain capsule one drop of a freshly prepared tincture of guaiac and then a drop of copper sulphate solution.—*Fresenius Ztschr. f. an. Chem.; Pharm. Ztg.*, 1891, 586.

Antidote for hydrocyanic acid.—Prof. Dr. Kobert has proved experimentally that hydrogen peroxide is a valuable antidote for hydrocyanic acid poisoning. It is to be given internally as well as subcutaneously until the odor of the acid can no longer be recognized in the exhalations and the symptoms subside. He found that lethal or even larger doses could be given to animals daily for several weeks if hydrogen peroxide be injected in one cubic centimeter doses when the symptoms of poisoning appear. The antidote acts by changing hydrocyanic acid into oxamide.—*Pharm. Centralhalle*, 1891, 570.

The pharmacology of oxalic acid and its derivatives.—Former experiments by Prof. Kobert upon the mentioned compounds proving that their administration causes glycosuria having been doubted, he confirmed these and now states that not only the acid and its acid salts, but also the neutral salts cause glycosuria, if given even in small quantity; the internal use of extractum Syzygii Jambolani (*Am. Journ. Pharm.*, 1888, 339, 368; 1890, 50) promptly removes the glycosuria.—*Pharm. Centralhalle*, 1891, 569.

Saffron.—An examination of a number of samples of genuine saffron ascertained that the ash varied between 4·5 and 5·5 per cent. and that the moisture varied from 10 to 12 per cent. Attention is directed to the statement that saffron is frequently stored in damp places so as to increase in weight. In addition to a close inspection of this drug the above determinations are helpful in determining adulterations.—Cæsar & Loretz; *Apotheker Ztg.*, 1891, 509.

To detect mineral oils in fixed oils.—P. Soltsien treats the oil with concentrated sulphuric acid, and, after the action is complete, agitates thoroughly with petroleum-ether, separates the latter, evaporates it and examines the residue left on evaporation. The process depends upon the formation of compounds of the fixed oils and sulphuric acid which are not soluble in petroleum-ether, while the mineral oils are not changed and are therefore soluble in petroleum-ether. The presence of small quantities of rosin oil in boiled linseed oil was detected by this method.

Adulterations. — *Powdered cinnamon* is frequently adulterated with powdered sugar, from 10 to 16 per cent. having been found; the object of the adulteration being to disguise the bitter and sharp taste of inferior grades.

Powdered mace is often mixed with considerable quantities of Bombay mace (see Am. Journ. Pharm., 1890, 398; 1891, 188); the addition of powdered or ground nutmeg can be determined by the presence of starch in such mace.—P. Soltsien; *Pharm. Ztg*, 1891, 600.

The Hydrastis alkaloids are three in number, hydrastine, berberine and canadine; this last alkaloid, first discovered by F. Wilhelm, is easily isolated owing to its difficultly soluble salts. It forms white lustrous needles, melting at 134° C., has the formula $C_{21}H_{21}NO_4$, and is, chemically, dihydromethyl-berberine.

Papaveraceæ alkaloids.—Sanguinarine has been found to consist of *four* alkaloids: *chelerythrine*, *sanguinarine* (apparently identical with one of the alkaloids of Stylophoron diphyllum and of Macleya cordata), *β-homo-chelidonine* (yielding colorless salts), and *protopine* (yielding colorless salts); the latter is very probably identical with *macleyine* and one of the alkaloids from Eschscholtzia californica (see Amer. Jour. Pharm., 1891, p. 457).

Narcotine has been proven to be methoxylated hydrastine.

Scopolamine is the name given to an alkaloid which was supposed to be hyoscine but upon examination proved to be a new alkaloid having the formula $C_{17}H_{21}NO_4$; it contains two atoms oxygen more than apoatropine and atropamine; by boiling with baryta it yields tropic acid and a base having the formula $C_8H_{13}NO_2$ and melting at 110°. The commercial hyoscine hydrobromate consists essentially of scopolamine hydrobromate. Scopolamine has been found in small

quantity in belladonna and in stramonium, and in some specimens of the leaves of Duboisia the mydriatic alkaloid was found to be largely this alkaloid, while in other specimens largely hyoscyamine was found.—Ernst Schmidt, *Apotheker Ztg.*, 1891, 522.

The oils of cinnamon leaves and roots.—The oil of the leaves consists essentially of eugenol with traces of cinnamic aldehyde and small quantities of terpenes. The oil of the roots contains a large quantity of eugenol, considerable quantities of terpenes and safrol and a minute quantity of benzaldehyde.—J. Weber, *Apotheker Ztg.*, 1891, 522.

THE ACTION OF SULPHUROUS ACID ON THE ECONOMY.

The importance of a knowledge of the effects of sulphurous acid on the human organism has been of late very much increased by the frequency with which this agent is now employed for the preservation of wine and vegetables. It is known that after animals have been poisoned by breathing air impregnated with sulphurous acid, the highly irritating properties of the gas are manifested by the injected state of the blood-vessels of the mucous membrane of the respiratory tract where the sulphurous acid has come in contact with it, the blood of the viscera being found dark and coagulated. Also that animals that are not killed recover very rapidly, but after a few days show signs of bronchitis and pneumonia, and die. The subject has recently been examined by Dr. L. Pfeiffer, who in some experiments employed sulphurous acid in the form of neutral sulphite of sodium, and not in the free state, so as to avoid the caustic action. He found that both warm and cold-blooded animals recovered very rapidly from an almost moribund condition, which showed that there must be either very rapid elimination or a chemical change into some harmless substance. Experiments instituted with the object of elucidating this point showed that 96·5 per cent. of the sulphite was eliminated by the kidneys as sulphate, the remaining 3·5 per cent. only as sulphite. When a large quantity of sulphite had been administered it was nearly all eliminated in five hours. Dr. Pfeiffer believes that when vegetable feeders are made to breathe air containing free sulphurous acid for some considerable time, a reduction of the alkalinity of the blood is induced. In animals breathing air containing from one to three parts of sul-

phurous acid per thousand, intense inflammation of the tracheal and bronchial mucous membrane was produced, also inflammatory foci in the tissue of the lungs, the blood in the capillaries becoming black and coagulated. Injections of a 5 per cent. solution of sulphurous acid into the stomach set up very extensive and severe gastritis, not only all the coats of the stomach itself being affected, but also the superficial portions of neighboring organs, as the liver and the diaphragm, death occurring in from three to five minutes. It is suggested that this rapid and far-reaching action may be due to the disengagement of the gas by the heat of the stomach, so that it diffuses itself much more rapidly than a liquid could do. Dr. Pfeiffer finds that in some wines there is as much as eight parts of sulphurous acid, probably as bisulphite of lime, in 100,000, and that in preserved vegetables, such as are used in the army and on board ship, there is often a very appreciable quantity either free or combined with alkalies, this being especially the case with preserved asparagus.—*Lancet; Med. and Surg. Rep.*, Oct. 10, p. 579.

ON THE ACTION OF APOMORPHINE AND APOCODEINE.[1]

By W. Murrell.

Apomorphine, which is derived from morphine, has been largely and successfully used by the writer, who has long advocated its employment as an emetic, and during the last few years has administered it as an expectorant with successful results. Given hypodermically, $\frac{1}{10}$ of a grain acts promptly as an emetic, but when administered by the mouth as an expectorant much larger doses are required and well borne.

Dr. Gee, who first drew attention to the properties of apomorphine in 1869, regarded $\frac{1}{4}$ grain given by the mouth as a certain vomiting agent; but Dr. Murrell finds that the majority of his patients can take a grain of apomorphine three times a day without inconvenience, and that by many as much as $1\frac{1}{2}$ to 2 grains three times daily is borne without difficulty. Most of the patients treated by Dr. Murrell with large doses of apomorphine were suffering from bronchial catarrh or chronic bronchitis, and the drug exerted a powerful expectorant action without producing either nausea or emesis, the large doses being much more effective than smaller ones.

[1] *British Medical Journal;* Med. Chronicle, June, 1891.

At first Dr. Murrell began with small doses, such as $\frac{1}{20}$ of a grain, but sometimes he commenced with from three to six-tenths three times a day. In a few cases apomorphine given by the mouth produced nausea and vomiting.

Apomorphine made into an ointment is a valuable form of administration, especially useful in the case of children. To ascertain what the emetic dose would be if the drug were given in this way, three ointments were prepared with lard, vaselin, and lanolin, each containing $\frac{1}{10}$ grain of apomorphine to the drachm. These were given to different patients with instructions that the ointment should be rubbed on the chest before the fire at bedtime. No emetic effect resulted. Even when the quantity was increased by rubbing in $\frac{1}{2}$ grain in half an ounce of lard vomiting was not produced, but with that dose there was an expectorant action lasting some hours.

When used in the form of spray the expectorant action is very marked; $\frac{1}{10}$ to $\frac{3}{10}$ of a grain may be used in this way with a little water, the patient being told not to swallow the fluid which accumulates in the mouth.

In a few cases a narcotic effect has been described as occurring after apomorphine, but Dr. Murrell thinks this is either imaginary or due to a mixture of apomorphine with morphine.

Apomorphine has the advantage of compatibility with morphine. It may be given in cases of opium poisoning as an emetic, and as an expectorant the combination is very useful, especially in cases of phthisis.

In the majority of the cases treated by the author, the drug was given in mixture with syrup of wild cherry, syrup of tar and syrup of lemon.

It is well known that a solution of apomorphine changes color after a time, becoming dark green after exposure to light and air.

The author used both freshly prepared solutions and those which had been kept for months and had changed color. There was no perceptible difference in their action, and the change in color seems to have no harmful effect. The direction given with the B. P. injectio apomorphine hypodermica (1 in 50), that it should be made as required for use, is unnecessary.

Dr. Murrell has made experiments with apocodeine. Apocodeine ($C_{18}H_{19}NO_2$), bears the same relation to codeine ($C_{18}H_{21}NO_3$) as apomorphine does to morphine, containing an equivalent less of H_2O. It is made by acting on codeine with chloride of zinc.

Apocodeine is insoluble in water; the hydrochlorate is freely soluble. It is not crystallizable like the hydrochlorate of apomorphine, but is more stable and more easily made.

Dujardin-Beaumetz has described it as possessing the therapeutic properties of apomorphine in a modified degree, and Dr. Murrell's experiments lead him to a similar conclusion.

After $\frac{3}{10}$ of a grain injected subcutaneously in a chronic bronchitic patient neither sickness nor vomiting followed, but copious expectoration was produced. In another case half a grain subcutaneously did not cause sickness. Legg found great irritation follow its subcutaneous use. Dr. Murrell does not find this where a neutral solution is used.

Dr. Murrell has also administered hydrochlorate of apocodeine by the mouth as an expectorant in six cases with satisfactory results. In only one case did it cause sickness. It may be given in solution or as a pill. Three or four grains daily may be safely given.

POISONOUS CONSTITUENTS OF "TIMBÓ."[1]

By F. Pfaff.

Timbó is the name given in Brazil to several plants such as *Serjania cuspidata*, St. H., *Serjania lethalis*, and *Paullinia pinnata* of the order Sapindaceæ, and *Tephrosia toxicaria* and *Physalis heterophylla* of the order Leguminosæ, all of which are used for the purpose of stupefying fish. A decoction of the root is preferred as affording the more powerful poison. The material collected by the author consisted of root and branches, without flower or fruit, and could only be identified as coming from a leguminous plant. To isolate the active principle, an alcoholic extract of the plant was concentrated, washed with water, treated with ether, and the dark colored ethereal solution decolorized by means of sodium carbonate and dilute soda solution. After removing the ether and drying over sulphuric acid, solid crude timboïn was obtained, which softened when exposed to the air. A similar product was obtained by precipitating the alcoholic extract with lead acetate, and purifying the filtrate. Further treatment of the crude product with alcohol, light petroleum, and benzene or chloroform at length yielded a hard, yellowish-white, sandy substance, which, under the microscope, clearly indicates crystalline structure. *Timboïn*, $C_{27}H_{26}O_8$, melts at

[1] *Arch. Pharm.*, **229**, 31–48; Jour. Chem. Soc., Aug., 1891.

83°, is very soluble in ether, alcohol, benzene, glacial acetic acid, toluene, and carbon bisulphide, exceedingly soluble in chloroform; very sparingly soluble in light petroleum, and almost insoluble in water. Its alcoholic solution is not precipitated either by normal or basic lead acetate, iodine solution, or tannin. Its solution in acetic acid or in alcohol gives a white, flocculent precipitate with water; but these solutions give no coloration, either with ferric chloride or potassium chromate. The compound becomes first black and then reddish-brown with concentrated sulphuric acid. Sobieranski considers timboïn to be a chemically neutral, indifferent substance, and a nerve poison of the toxine class. *Anhydrotimboïn*, $C_{27}H_{24}O_7$, was obtained as slender, colored, needle-shaped crystals during the refining of the crude timboïn. It was also produced directly from timboïn by heating the alcoholic solution with hydrochloric acid. This compound melts at 215–216°, and is not poisonous. Light petroleum, boiling at 38–40°, extracted from the crude timboïn an oily compound, *timbol*, $C_{20}H_{16}O$, probably also a poisonous compound, occurring chiefly in the stem and branches of the plants.

RAPHIDES, THE CAUSE OF THE ACRIDITY OF CERTAIN PLANTS.

By R. A. Weber, Ph.D.

At the last meeting of the American Association for the Advancement of Science, Prof. W. R. Lazenby reported his studies on the occurrence of crystals in plants. In this report he expressed the opinion that the acridity of the Indian turnip was due to the presence of these crystals or raphides. This opinion was opposed by Prof. Burrill and other eminent botanists, who claimed that other plants, as the fuchsia, are not at all acrid, although they contain raphides as plentifully as the Indian turnip. Here the matter was allowed to rest.

The U. S. Dispensatory and other works on pharmacy ascribe the acridity of the Indian turnip to an acrid, extremely volatile principle insoluble in water and alcohol, but soluble in ether. Heating and drying the bulbs dissipate the volatile principle, and the acridity is destroyed.

At a recent meeting of Ohio State Microscopical Society this subject was again brought up for discussion. It was thought by some that the raphides in the different plants might vary in chemi-

cal composition, and thus the difference in their action be accounted for. This question the writer volunteered to answer.

Accordingly, four plants containing raphides were selected, two of which, the *Colocasia* and Indian turnip, were highly acrid, and two, the *Fuchsia* and *Tradescantia*, or Wandering Jew, were perfectly bland to the taste.

A portion of each plant was crushed in a mortar, water or dilute alcohol was added, the mixture was stirred thoroughly and thrown upon a fine sieve. By repeated washing with water and decanting a sufficient amount of the crystals was obtained for examination. From the calla the crystals were readily secured by this means in a comparatively pure state. In the case of the Indian turnip the crystals were contaminated with starch, while the crystals from the fuchsia and tradescantia were imbedded in an insoluble mucilage from which it was found impossible to separate them. The crystals were all found to be calcium oxalate.

Having determined the identity in chemical composition of the crystals, it was thought that there might be a difference of form of the crystals in the various plants, from the fact that calcium oxalate crystallizes both in the tetragonal and the monoclinic systems. A laborious microscopic examination, however, showed that this theory also had to be abandoned. The fuchsia and tradescantia contained bundles of raphides of the same form and equally as fine as those of the acrid plants. At this point in the investigation the writer was inclined to the opinion that the acridity of the Indian turnip and calla was due to the presence of an acrid principle.

Since the works on pharmacy claimed that the active principle of the Indian turnip was soluble in ether, the investigation was continued in this direction. A large stem of the calla was cut into slices, and the juice expressed by means of a tincture press. The expressed juice was limpid and filled with raphides. A portion of the juice was placed into a cylinder and violently shaken with an equal volume of ether. When the ether had separated a drop was placed upon the tongue. As soon as the effects of the ether had passed away, the same painful acridity was experienced as is produced when the plant itself is tasted. This experiment seemed to corroborate the assumption of an acrid principle soluble in ether. The supernatant ether, however, was slightly turbid in appearance, a fact which was at first ignored. Wishing to learn the cause of

this turbidity a drop of the ether was allowed to evaporate on a glass slide. Under the microscope the slide was found to be covered with a mass of raphides. A portion of the ether was run through a Munktell filter. The filtered ether was clear, entirely free from raphides, and had also lost every trace of its acridity.

The same operations were repeated upon the Indian turnip with exactly similar results.

These experiments show conclusively, that the acridity of the Indian turnip and calla is due to the raphides of calcium oxalate only.

The question of the absence of acridity in the other two plants still remained to be settled. For this purpose some recent twigs and leaves of the fuchsia were subjected to pressure in a tincture press. The expressed juice was not limpid, but thick, mucilaginous and ropy. Under the microscope the raphides seemed as plentiful as in the case of the two acrid plants. When diluted with water and shaken with ether, there was no visible turbidity in the supernatant ether, and when a drop of the ether was allowed to evaporate on a glass slide, only a few isolated crystals could be seen. From this it will be seen that in this case the raphides did not separate from the mucilaginous juice to be held in suspension in the ether. A great deal of time and labor were spent in endeavoring to separate the crystals completely from this insoluble mucilage but without avail. With the tradescantia similar results were obtained.

From these experiments the absence of acridity in these two plants, in spite of the abundance of raphides, may readily be explained by the fact, that the minute crystals are surrounded with and embedded in an insoluble mucilage, which prevents their free movement into the tongue and surface of the mouth, when portions of the plants are tasted.

The reason why the Indian turnip loses its acridity on being heated, can be explained by the production of starch paste from the abundance of starch present in the bulbs. This starch paste would evidently act in a manner similar to the insoluble mucilage of the other two plants.

So also it can readily be seen that when the bulbs of the Indian turnip have been dried, the crystals can no longer separate from the hard mass which surrounds them, and consequently can exert no irritant action when the dried bulbs are placed against the tongue. —Jour. Amer. Chem. Soc., Sptb., 1891, p. 215.

THE LIQUORICE PLANT AS FOUND ON THE BANKS OF THE TIGRIS AND EUPHRATES.

In a report on the trade of Bussorah, Consul Chenevix-Trench says: The great rivers of the Tigris and Euphrates, in the part where the liquorice root is found, flow through flat treeless prairies of uncultivated and nearly uninhabited land, capable with irrigation of producing any grain. For three months of the year hot winds blow, and the temperature reaches 104 degrees. For six months the climate is moderate and salubrious, and for three months bleak and wintry, the thermometer going down to 30 degrees at night. The liquorice plant is a small shrub, with light foliage, growing to about 3 feet high, invariably where its root can reach the water. It grows without any cultivation. No lands are leased for the purpose, and no objection is made to its being collected. It is found in abundance, from Ctesiphon, 20 miles from Baghdad, down to Kut-ul-Anara, 178 miles—the latter place being half-way between the ports of Bussorah and Baghdad. It grows on red earth soil, and also on light, almost sandy soil, where the wood is best—provided it has plenty of water, and the ground is not more than 50 yards from the actual river or stream. The one firm which works it in Baghdad is Messrs. Zerlendi and Essayie; and it is well known that the business is a prosperous one. The plant is dug up by Arab labor, which is, generally speaking, plentiful, and the men can be brought by boat to where the plant is growing. The laborers need superintendence. They are paid according to the quantity dug. The wood, after being once dug up and cut, grows again better afterwards. The time of collecting is, generally speaking, during the winter, but it is possible all the year round. The root when dug is full of water, and must be allowed to dry; this process takes the best part of a year, especially in hot weather. After it is dry, or during the process, it is sawn or cut into small pieces 6 inches to 1 foot long. The good and sound pieces are kept, and the rotten bits removed for firewood. A local tax of 10 per cent. is claimed by the Government, which may be taken in money or kind from roots cut from the Sultan's lands, and 20 per cent. from Government lands. It is then shipped in river native boats for Bussorah, where there is a wool hydraulic press. It is afterwards shipped in pressed bales to London, and again shipped from there to America, where it is used largely in the manufacture of tobacco. The trade is capable of expansion. The demand in America is great, and shipments are easily disposed of.—*Phar. Jour. and Trans.*, Sept. 26, p. 247.

CHEMICAL COMPOSITION OF THE FRUIT OF TOMATOES.[1]

G. Brissi and T. Gigli (*Staz. Sper. Agrar.*, **18**, 5–34), separated the ripe fruit of tomatoes into skin, seeds and pulp. The pulp was further separated, by filtration through calico, into a red, insoluble substance and a yellow liquid, both of which were examined qualitatively, and then the various constituents determined quantitatively. The results given below are the averages of several analyses.

The pulp itself forms 85·4 per cent. of the whole fruit; it contains: total dry matter, 4·725; soluble substance, 3·735; and insoluble matter, 1·093 per cent.

The following numbers show the percentage composition (I) of the dry matter of the red insoluble substance, and (II) of the dry matter of the yellow filtrate:

	I.	II.
Total nitrogen,	4·002	2·254
Proteïds,	25·012	2·43
Coloring matters,	21·128	—
Cellulose,	34·390	—
Ash,	7·959	10·96
Levulose,	—	46·68
Citric acid,	—	14·03
Amide-nitrogen,	—	0·641
Amido-acid nitrogen,	—	1·224

The percentage composition of the ash of the two products is as follows:

	K_2O.	Na_2O.	CaO.	MgO.	Cl.	SO_3.	P_2O_5.
I,	—	—	18·127	1·423	—	—	15·866
II,	58·554	1·425	1·315	0·169	8·842	0·781	7·182

	CO_2.	SiO_2.	Not Determined.
I,	—	—	64·584
II,	18·832	0·451	2·449

N. Passerini (*Staz. Sper. Agrar.*, **18**, 545–572), found the fresh fruit of tomatoes to consist of skin (1·3), pulp and juice (96·2), and seeds (2·5 per cent.). The pulp contains two coloring matters, a yellow, amorphous substance and a red, crystalline substance. They are both insoluble in water, soluble in amyl alcohol, and very soluble in ether, and both are decolorized by chlorine and bromine-water. The red crystals are almost insoluble in cold alcohol, whilst the

[1] From Jour. Chemical Society, August, 1891, pp. 955, 956.

yellow compound is very soluble. Hydrochloric acid has no action on either compound.

The sap of the fruit has a sp. gr. = 1·01833 at 15°, and is lævorotatory. It contains a yellow coloring matter, which differs from that of the pulp in being soluble in water, insoluble in alcohol, ether, chloroform, and light petroleum, and in not being decolorized by chlorine-water or bromine-water. The acidity of the sap is due chiefly to citric acid; it contains also a small amount of an alkaloid, which, like the acid, decreases as the fruit ripens.

The following table shows the percentage of dry matter (1) in the skins, (2) in the pulp, (3) in the sap, and (4) in the seeds, as well as the percentage composition of the dry matter in each case.

	Dry matter.	Organic matter.	Ash.	Porteïds.	Carbohydrates. and fat.
Skins, ...	40·50	99.20	0·80	1·85	97·05
Pulp, ...	6·35	89·56	10·44	15·15	74·41
Sap, ...	2·44	74·52	25·48	21·80	52·72
Seeds, ...	53·70	95·56	4·40	25·40	70·16

The carbohydrates of the skins are chiefly in the form of cellulose. The numbers in the last column for sap refer to carbohydrates and acids.

The following analyses are given of the entire fruit collected (1) in September, 1888, and (2) August, 1889; (1) was unripe, and (2) ripe. The percentage of dry matter was 93·50 and 91·01, respectively. The numbers show the percentage in the fruit dried at 105°.

	Glucose.	Citric acid.	Proteïds.	Fat and coloring matter.	Cellulose.	Ash.
1, ...	2·68	48·53*	11·25	11·73	7·83	8·05
2, ...	41·54	9.07	11·48	7·02	18·14	12·73

* Citric acid and substances not determined.

The ash of the fruit has the following percentage composition:

K_2O.	Na_2O.	CaO.	MgO.	Fe_2O_3.	P_2O_5.	SO_3.	SiO_2.	Cl.
59·46	5·99	1·34	3·09	0·22	12·93	3·49	0·27	19·14

Having regard to the large amount of potash in the fruit, and the large amount of lime in the stems and leaves (the crude ash of the stems contains 28·32 per cent. of lime) the following manuring is recommended for tomatoes: Farmyard manure, 5,000 kilos., calcium superphosphate (18 per cent.), 30 kilos.; potassium chloride (50 per cent.), 60 kilos. per hectare.

OIL OF POLEI.[1]

By. E. Beckmann and M. Pleissner.

Spanish oil of Polei, from *Mentha Pulegium*, is a light yellow or green, rather thick liquid with an odor recalling that of peppermint. On fractionating the oil (62 grams), under the ordinary atmospheric pressure, considerable decomposition takes place; a small portion (3 grams), consisting principally of water, passes over below 212°, the principal portion (50 grams) between 212° and 216°, and a small quantity of a dark yellow liquid (4 grams) between 216° and 223°, leaving a brownish residue (5 grams).

A compound of the composition $C_{10}H_{16}O$, named by the author *pulegone*, can be isolated from the portion boiling at 212–216° by repeated fractional distillation under reduced pressure (60 mm.); it is a colorless liquid, of sp. gr. 0·9323 at 20°, boils at 130–131° (60 mm.), and has an odor recalling, but distinct from, that of oil of peppermint. Its specific rotatory power is $[\alpha]_D = 22{\cdot}89$, but this value is slightly diminished when the oil is treated with sulphuric acid or distilled with steam, probably owing to resinification. Pulegone quickly turns yellow, even when kept in closed vessels, and it does not solidify when cooled in a mixture of ice and salt; it is gradually resinified by hot alcoholic potash, and it does not give an ethereal salt with benzoic or stearic anhydride; it gives some, but not all, the reactions of aldehydes, and with phenylhydrazine it yields only oily or resinous, very unstable compounds. Molecular weight determinations gave results in accordance with those required by the molecular formula $C_{10}H_{16}O$; its molecular refractive power was found to be $M_D = 45{\cdot}55$, whereas the value calculated for the formula $C_{10}H_{16}O''$ is $M_D = 45{\cdot}82$.

Pulegoneoxime, $C_{10}H_{19}NO_2$, can be obtained by treating pulegone with hydroxylamine in boiling alcoholic ethereal solution; it crystallizes from ether in long needles, melts at 157° with decomposition, and is only sparingly soluble in cold alcohol, benzene and light petroleum; its specific rotatory power is $[\alpha]_D = -83{\cdot}44$. Molecular weight determinations showed that the compound has the molecular formula given above. Pulegoneoxime is more readily soluble in dilute acids than menthoneoxime, and, unlike the latter, it is not acted on by cold sulphuric acid of sp. gr. 1·17; it dissolves

[1] *Annalen*, **262**, 1–37; Jour. Chem. Soc., August, 1891, p. 936.

freely in hydrochloric acid, yielding a solution which gradually turns brown, but it is only very sparingly soluble in alkalis. It reduces ammoniacal solutions of silver and copper on warming. The *hydrochloride*, $C_{10}H_{19}NO_2HCl$, separates from alcoholic ether in well-defined rhombic crystals, $a : b : c = 0{\cdot}6048 : 1 : 1{\cdot}0477$, melts at 117–118° with decomposition, and is readily soluble in water; its specific rotatory power is $[\alpha]_D = -32{\cdot}43°$. The *benzoyl* derivative, $C_{10}H_{18}O{:}N{\cdot}OBz$, prepared by treating the oxime with benzoic chloride in ethereal solution, crystallizes from dilute alcohol in colorless needles melting at 137–138° with decomposition. The *acetyl* derivative, $C_{10}H_{18}O{:}N{\cdot}OAc$, is formed when the oxime is warmed with acetic chloride; it crystallizes in long needles, and melts at 149°.

Pulegoneamine, $C_{10}H_{19}ON$, is obtained when the oxime is treated with hydriodic acid, and the crystalline hydriodide obtained in this way warmed with excess of the concentrated acid; it is a yellowish oil having a bitter taste and an amine-like odor, and it decomposes when heated; it is only sparingly soluble in water, but readily in ether and alcohol. The *hydrochloride*, $C_{10}H_{19}NO,HCl$, was prepared, but only in an impure condition, by treating the base with hydrogen chloride in ethereal solution; it crystallizes from alcohol in long needles, melts at 117°, and is readily soluble in water, alcohol, benzene, and glacial acetic acid, but only moderately easily in light petroleum, and sparingly in ether. *Pulegoneamine phenylthiocarbimide*, $C_{10}H_{18}O{:}N{\cdot}CS{\cdot}NHPh$, is precipitated in colorless plates on warming a benzene solution of pulegoneamine with phenylthiocarbimide; it melts at 138°. The *benzoyl* derivative, $C_{10}H_{18}O{:}NBz$, separates from warm, dilute alcohol in colorless, feathery crystals, melts at 100·5–101°, and is sparingly soluble in water, ether and benzene, but readily in alcohol. The *methyl* derivative, $C_{10}H_{18}O{:}NMe$, prepared by boiling the amine with methyl iodide, and decomposing the product with potash, is a light-yellow oil; its *platinochloride*, $(C_{11}H_{21}NO)_2,H_2PtCl_6$, crystallizes in well-defined yellow needles, and is sparingly soluble in alcohol and ether. When pulegoneamine is boiled with concentrated potash, it is decomposed into pulegone and ammonia; methylpulegoneamine, under the same conditions, yields pulegone and methylamine.

An additive compound of the composition $C_{10}H_{17}BrO$ is deposited in colorless crystals when hydrogen bromide is passed into a well-

cooled solution of pulegone in light petroleum; it separates from dilute alcohol in well-defined, colorless crystals, melts at 40·5°, and is readily soluble in alcohol and ether. It gradually decomposes on keeping, and it is converted into pulegone by freshly-precipitated silver oxide and lead hydroxide, but it is not acted on by cold dilute soda or by warm sodium carbonate; its specific rotatory power is $[\alpha]_D = -33 \cdot 88°$. When treated with hydroxylamine, as described in the preparation of pulegoneoxime, it is converted into a compound which crystallizes in quadratic plates, melts at 38°, and has probably the composition $C_{10}H_{18}BrNO$; on keeping this substance for some time, it first changes into a mass of needles melting at 110°, which are free from bromine, but contain nitrogen, and then into pulegoneoxime. When the additive compound is reduced with zinc-dust in alcoholic solution, it yields very small quantities of pulegone and a considerable quantity of an oil, which has the same molecular formula as, and possesses all the properties of, the levomenthone described by Beckmann (1889), except that its oxime melts at a higher temperature, namely, at 84–85°; when this isomeride of menthone is treated with sodium in ethereal solution, it is converted into a mixture of isomeric menthols, from which a considerable quantity of the benzoyl derivatives of natural lævomenthol can be isolated in a crystalline condition. Lævomenthol is also obtained, together with resinous products, when pulegone is reduced with sodium under the same conditions.

The author gives three possible formulæ for pulegone.

ON SOME DERIVATIVES OF BENZOIC SULPHINIDE (SACCHARIN OR BENZOYL SULPHONIC IMIDE), AND THE CHANGES CAUSED IN THEIR TASTE BY CHANGES IN COMPOSITION.[1]

By R. De Roode.

The most characteristic property of parabromosulphinide is that it possesses two distinct tastes, a bitter and a sweet, and the corresponding chlorine compound has the same peculiarity in even a more marked degree. The author has, therefore, investigated the other para-halogen-sulphinides, and the substances from which they are made, and observed their effect upon the nerves of taste.

[1] From the *Amer. Chem. Journ.*, xiii, 217–232. Reprinted from the *Journ. of the Soc. of Chem. Ind.*, July.

The starting point for their preparation was paradiazotolueneorthosulphonic acid, which was converted into parafluortolueneorthosulphonic acid by heating with concentrated hydrofluoric acid in a platinum dish until the decomposition was complete, evaporating to a syrupy consistence, diluting with a large quantity of water, and neutralizing with barium carbonate (the calcium salt not being easily crystallizable). From the barium salt the potassium compound was obtained by treatment with potassium carbonate. This latter salt crystallizes from water in large glistening scales, containing two molecules of water of crystallization. The corresponding chlorine and bromine salts were prepared in a similar manner, potassium chlortoluenesulphonate crystallizing in light yellow needles containing no water, and the bromtoluenesulphonate in thin lustrous scales containing 1 mol. of water of crystallization. For the preparation of the iodo-salts the diazo compound was decomposed by hydriodic acid in presence of alcohol, the flask being kept cool; after the evolution of nitrogen had ceased the contents were warmed and the alcohol distilled off. The residue was diluted with a large quantity of water, neutralized with lead oxide and filtered hot. The lead salt, being insoluble, could not be easily freed from the excess of oxide, and was converted into the potassium salt, which crystallized from aqueous solution in transparent "whetstone-shaped" crystals containing 1 mol. of water and corresponding to the potassium salt of the β-iodotoluenesulphonic acid described by Glassner (*Berichte*, viii, 561). Accompanying the insoluble lead salt was another which was very soluble; it was not examined as such, but was converted into the potassium salt, and on analysis gave figures corresponding to potassium toluenesulphonate.

From these four potassium salts, the corresponding amides were prepared by the action of phosphorus pentachloride, followed by aqueous ammonia. The solutions were evaporated to dryness on the water-bath, alcohol added, and after treatment with animal charcoal, crystallized out. With the exception of the iodo salt, all are easily soluble in hot water and alcohol, sparingly soluble in cold water. The melting-point of the fluorine salt is 155°, of the chlorine salt, 145°, and of the iodine salt, 185–187° (uncorrected). From these amides, the sulphinides (sulphonic imides) were prepared by oxidation with alkaline permanganate, the most successful

method of working being found to be as follows: 20 grams of the amide and 8 grams of caustic potash were dissolved in 2 litres of water in a large flask and placed on the water-bath. A concentrated solution of 35 grams of potassium permanganate was then added by degrees, the flask being kept hot until only a slight pink color remained, an operation lasting about six or eight hours. A little alcohol was then added, and the liquid filtered and evaporated to about 75 cc. While still hot, the sulphinide, together with some unaltered amide, was precipitated with strong hydrochloric acid; to separate them the mixed precipitate was boiled with water, neutralized with chalk, filtered and allowed to cool, the amide crystallizing out in long white needles. On further evaporation the calcium salt of the sulphinide was obtained. These all crystallize in radial groups of white needles, having the same tastes as the sulphinides themselves, and containing 7½ molecules of water of crystallization. From these calcium salts the pure sulphinides were obtained by precipitation with strong hydrochloric acid.

Parafluorosulphinide, thus prepared, crystallizes from hot water in long white needles, which break up on drying into granules; from a dilute solution it may be obtained in small transparent rhombs. Its melting-point is 200–202° (uncorrected). Its taste is almost purely sweet, a slight bitter after-taste being perceptible. It is probably as sweet as benzoic sulphinide.

Parachlorosulphinide crystallizes in thin pearly scales, melting at 218°. It is slightly less soluble than the fluorine compound. It has both a sweet and a bitter taste, the latter being the more intense.

Parabromosulphinide also possesses both tastes, but in a less marked degree, and *para-iodosulphinide* has only a slight bitter taste. The latter crystallizes in fine white needles and melts at 230–232°. On boiling with dilute hydrochloric acid, *p*-chlorosulphinide is converted into the acid ammonium salt of *p*-chlorortho-sulphobenzoic acid, just as benzoic sulphinide is into that of ortho-sulphobenzoic acid.

With regard to the tastes of these halogen derivatives, it is found difficult to describe the differences accurately; they have been tasted by several, the majority of whom agree with the author in his description. "It is, however, impossible to make accurate comparison between a sweet and a bitter taste as regards the relative intensity of the two."

ABSTRACTS FROM THE FRENCH JOURNALS.

TRANSLATED FOR THE AMERICAN JOURNAL OF PHARMACY.

A NEW REAGENT FOR ALBUMIN IN URINE.—M. and Ad. Jolles (*Union pharmac.*; *Nouv. Remèd.*, 1891, No. 7), propose the following method for testing for albumin: 8–10 cc. urine are mixed with an equal volume of concentrated hydrochloric acid and to this mixture are added from a pipette a few drops of a saturated solution of chloride of calcium in such a manner that the liquids will not mix. In presence of even traces of albumin the dividing line will show a distinct white cloudiness.

DERIVATIVES OF SALOL IN URINE.—Lacroix (*Répertoire de Pharmacie; Bull. de Thérapeut.*, 1891, cxx, 284) calls attention to the fact that patients taking salol internally or using it externally pass a urine having the property of reducing certain metallic oxides (copper, silver and bismuth) just as is the case with diabetic urine. The examination with the saccharometer can also not be depended on, the rotatory power of these salol compounds being opposed to that of glucose. The author gives an optical and a chemical method for distinguishing between the two. After treating the urine with subacetate of lead, a test tube holding 15 cc. is half filled with the same; to this is added ·05 gm. phenylhydrazin hydrochloride and ·2 gm. pure acetate of sodium. The test tube is then heated to 100° C. (212° F.) on a water-bath for half an hour. The contents are then poured into some water and allowed to cool. The precipitate formed is examined with the microscope. Glucose gives a crystalline precipitate while the salol compound gives an amorphous one. The other method is as follows: 100 cc. urine are shaken with 1 gm. sulphuric acid and about 50 cc. pure ether; it is then permitted to separate. The upper layer, containing the derivatives of salol, is evaporated, the residue dissolved in water and a few drops of perchloride of iron are added to it. This would give rise to a violet color in case salol were present. The lower layer, after separation from the ethereal solution, is treated with subacetate of lead, filtered, and the glucose then estimated in the usual manner.

Iodol.—Dr. Trouchet, of Larochelle (*Nouv. Remèd.*, 1891, p. 298), publishes the following formulæ for the exhibition of iodol (1) in the form of an *emulsion*: iodol 1 gm., glycerin 10 gm., water 20

gm., gum arabic 2·50 gm.; (2) in the form of a *solution:* iodol 10 gm., oil of sweet almonds or olive oil 150 gm., yielding a clear and limpid liquid; (3) as *crayons* or *bougies:* iodol 5 centigm., lanolin, wax, gum āā 0·25 gm.; (4) as a *salve:* iodol 1 gm., petrolatum 10 gm.

Sulphonal for the sweats of consumptives.—Erede (*Rif. med.*, 22 May, 1891) draws the conclusion, based on a large number of observations, that medium doses (½ to 1 gm.) of sulphonal suppress the phthisical night sweats with certainty, the effect continuing for some days after the cessation of the medicine.

Preparation of chlorine.—A Reychler (*Revue Scientif.*, through *Nouv. Remèd.*, 1891, 419) publishes a new method for the technical preparation of chlorine, based on the action of hydrochloric acid on two salts of magnesium. A solution of one part of manganese chloride, one part of magnesium chloride and one or two parts of sulphate of magnesium is evaporated to dryness and heated to dull red heat with access of air. The mixture gives off hydrochloric acid containing a small quantity of chlorine. The residue, consisting of sulphate and manganate of magnesium, is treated with hydrochloric acid; this liberates about one-quarter of the chlorine contained in the hydrochloric acid and yields the same solution with which the process was started. This is then treated like the original solution.

THE HYPNOTIC ACTION OF CHLORALAMIDE.—Triis (*Hospitals-Tidente* 1891, No. 12) has used chloralamide (chloral-formamide) in 29 cases (413 doses) and draws the following conclusions: With women the hypnotic action manifests itself with certainty on the exhibition of 2 gm.; males on the other hand are rather refractory. In cases of delirium tremens and chronic alcoholism it is usually without effect.

INFLUENCE OF TOBACCO ON HEALTHY PERSONS.—J. Ydan Pouchkine (*Wratch*, No. 48, 1890) arrived at the following conclusions on the action of tobacco after experimenting with seven non-smokers. The latter smoked twenty-five cigarettes every day for three days. (1) Tobacco increases the quantity of the gastric juice, but reduces its acidity; (2) it reduces the quantity of hydrochloric acid in the gastric juice; (3) as the quantity of free hydrochloric acid is diminished so is the digestive force of the gastric juice reduced; (4) it

retards the action of the rennet ferment; (5) the modification of the gastric juice produced by tobacco lasts for some time; (6) the mobility of the stomach and its resorbing power are augmented under the influence of tobacco; (7) it has no effect on the acidity of the urine.

HYPODERMIC INJECTIONS OF CORROSIVE SUBLIMATE IN DIPHTHERIA AND SCARLATINA.—Dr. J. Jacontini (*Morgagni*, 1890) administered by injections 1 centigram of corrosive sublimate in eight or nine days during an epidemic of scarlatina. The fever was reduced and at the same time the manifestations in the throat were modified. Encouraged by these results the author used this treatment in two cases of diphtheria with the satisfaction of obtaining a rapid attenuation of the morbid phenomena and followed by cure.

MOUTHWASH FOR CARIOUS TEETH.—A mouthwash said to prevent dental caries is as follows: tannin 5 gms., tincture of iodine and tincture of myrrh, of each 2·5 gm.; potassium iodide, 1 gm.; rose water, 180 gm. The mouth is rinsed every morning with one teaspoonful to a glass of warm water.—(*Bull. de Thérapeut.*, 1891, cxx, p. VIII.)

EXAMINATION FOR ADULTERATIONS OF TOMATO PRESERVES.—Capdeville (*Bull. de Thérapeut.*, 1891, cxx, p. 277) divides the analysis into an optical or microscopical and a chemical portion. The adulterations which are looked for by the first method are carrot and pumpkin, and this is done by comparison with sections of these vegetables. The chemical method takes cognizance of the presence of coloring matters such as eosin, cochineal and grenadin. *For eosin:* 5 gm. of the preserve are treated in a test tube with a mixture of 25 cc. of distilled water, 1 cc. ammonia and 25 cc. amylic alcohol. The mixture is then filtered, and in case the filtrate is rose-colored eosin is present which is also shown by the fluorescence. *For cochineal:* 5 gm. preserve are treated for 24 hours with 30 cc. alcohol of 95 per cent.; the liquid is then filtered and the alcohol evaporated on a waterbath. Should this residue on treatment with ammonia give a red color, cochineal is present. *For grenadin:* The preserve is treated with alcohol, the solution filtered and the filtrate evaporated to dryness, The residue is treated with water which dissolves the grenadin, and this aqueous solution is used for dyeing silk. Hydrochloric acid does not, while a solution of chloride of lime does, decolorize the silk even at ordinary temperatures.

ALUM IN BREAD.—Cohen (Il Selmi through *Bull. Thérapeut.*, 1891, CXX, 281) triturates the bread with water until disintegrated, and places in this mixture a piece of pure gelatin which he allows to remain for twenty-four hours. It is then washed with cold water containing a few drops of tincture of hæmatoxylon (1 : 10) and of a solution of carbonate of ammonium (1 : 10). Should the gelatin after this treatment assume a blue color alum was present.

DETECTION OF POTASSIUM BROMIDE IN POTASSIUM IODIDE.—This method is based on the insolubility of bromide of mercury in boiling alcohol. The potassium salt is dissolved and carefully precipitated with corrosive sublimate solution. The precipitate is treated a number of times with boiling alcohol in which the iodide of mercury is soluble.—(*Bull. de Thérapeut.*, 1891, CXXI, p. 93.)

POTASSIUM PERMANGANATE is formed, according to J. W. Retgers (*Rec. trav. chim.*, x, 1), when a solution of potassium manganate is mixed with a solution of ammonium sulphate, or other ammonium salt, containing much free ammonia; manganic acid is liberated, which, being unable to combine with ammonia, is decomposed into permanganic acid and manganic dioxide.

THE IDEAL PRECEPTOR.

By GEO. M. BERINGER, PH.G.

Read at the Pharmaceutical meeting of the Philadelphia College of Pharmacy, October 20.

Before attempting to describe our ideal preceptor, it is, perhaps, advisable to explain that the writer is not a proprietor. But for years it has been my lot to be daily in contact with pharmaceutical students and become more or less acquainted with their shortcomings. From this neutral ground I venture to criticise, as an unbiased observer, those who have largely the making of the future of pharmacy in America. I have no interest at stake and fear that I have not yet learned to accept the advice of Mr. Bigelow :

> The fust thing for sound politicians to larn is,
> Thet Truth, to dror kindly in all sorts o' harness,
> Mus' be kep' in the abstract—for come to apply it,
> You're ept to hurt some folks's interists by it.

Our *ideal* preceptor is not he who possesses the finest store, the largest trade, or the most fashionable patronage. Nor is it he who endeavors to impress you with the fact that he is making money and knows how to spend it; whose team is little "faster" than himself, and whose diamond is brighter than his eyes. Nor is our *ideal* he who confidentially tells his clerk that "it won't do to be too scrupulous," and who, perhaps, keeps a private bottle behind the prescription counter for the benefit of the patronizing physician. Who tipples himself and don't object to his clerks doing likewise. The contemptible, the

intemperate and the dishonest are found in the drug trade as elsewhere, as well among the employers as the employed. To such we need not address ourselves. Our *ideal* is not necessarily, he who allows the largest liberties, nor yet he who pays the best salaries. For some can afford to pay better salaries than others, and he who does the most questionable trade could pay the best. In this respect, the student in pharmacy must bear in mind that while serving his apprenticeship, he is working for knowledge which is more valuable to him in the end than his salary, and while acquiring this knowledge he must be willing to give a portion of his labor for the same.

It may be asked how many proprietors are really preceptors or teachers in the true sense of the word. It seems to me that in engaging a young man in the drug business, the proprietor assumes a moral obligation to impart certain information of a practical and scientific character which is necessary to our craft, and this information, as stated before, is considered as valuable and given in lieu of an adequate compensation.

It is our desire to adhere closely to the subject announced for discussion, the aid the preceptor should give the student, and to indicate some of the means by which he can assist the college in her aim at a higher educational standard, and to place pharmacy upon that scientific basis which it is bound to acquire.

The first reform must come in the selection of apprentices. Something is wanted more than the standing or wealth of the parents to make a successful pharmacist. I hold that it is the duty of the employer to select only such assistants as have, at least, that amount of common school education which is essential to their being able to grasp the more advanced studies. I do not believe that at the present time, with the acknowledged advancement of English literature, that an extended knowledge of the dead languages is necessary, but sufficient should be required to enable our students to work intelligently and profit by the course of instruction given.

It is a hopeless task for a student who is deficient in such ordinary branches as orthography, English grammar and common arithmetic, to attempt to master the teachings of the College of Pharmacy. In this respect, it will be a great stride in the right direction when all colleges of pharmacy will require matriculants to pass a satisfactory examination in the elementary branches before admission to instruction. I believe that more practical aid would be given to true pharmacy by this simple and apparently unimportant move, than all the efforts heretofore made to suppress cutting and the illegitimate selling of drugs. Raise the initial standard of pharmacy first, and the final standing will be proportionately higher.

The second thought that occurs is, where should the instruction of the student commence? Surely the duty of the preceptor does not end with teaching his assistant how to make a neat parcel, to politely wait on customers, to profitably sell proprietary and toilet articles and to be exact and neat. All of these are important, but something more is necessary. A systematic course of reading in elementary works, gradually leading up to the accepted standard text books, should be mapped out for the student from the day he enters the drug business.

I am compelled to believe that many of them come to the college with little or no idea of the branches taught, and no preparatory reading in the same. And many after having been two or three or even five or six years in the drug

business appear to be entirely ignorant of even the Pharmacopœia. Our official guide being to them a sealed book.

Our colleges would be rendering a great service which would redound to their credit a hundred-fold, if such a course were mapped out and published in their announcements. That such information is needed is proven by the frequent inquiry from intended students, "What course of reading would you recommend before attending lectures?" I know that the various announcements all contain a list of advised text books, but to the majority of students, at first they are just one limb too high. Give them the elementary foundation first to build on, and the superstructure will be sound.

I am firmly convinced that Lowell's words apply with equal force to others as to poets.

> Jes' so with poets, wut they've airly read
> Gits kind o' worked into their heart an' head.

There are a number of short cuts to pharmaceutical knowledge published under the title of quiz compends, etc. Their principal claim to popularity is that they aid the student in passing examinations. They are certainly not educators—not more so than a parrot is a teacher of a child. Their influence is harmful as they serve only to fix a few points in the mind, with much that is essential to proper education wanting. A veritable porous plaster education characterized by the size of the pores. The true student desires something more than just sufficient knowledge to pass an examination, and this is the class to be encouraged by both preceptor and teachers.

That this guidance in studies and formation of habits is necessary, to a certain degree, all through the course of apprenticeship is apparent. The theory of pharmacy may be taught by lectures, but the practical knowledge can only be obtained in the store. The teachings of one must supplement the other. One practical application in the store of the use of the metrical system of weights and measures is worth more to the student than hours of talk on the same. The opportunities for instruction occur daily, nay hourly. An unusual prescription is received necessitating some peculiar manipulation or perhaps an incompatibility in the same. A minute spent in explanation fixes it permanently in the student's mind. Some preparation is wanted. Don't send and buy or prepare it from a purchased fluid extract, but have it prepared, the first time, if possible, under your supervision. Call attention to the peculiarities, the various steps in the process, as, for instance, the character of powder, the amount of packing required, the menstruum necessary, the valuable constituents of the drug which it is desired to extract and maintain, its pharmacognosy and pharmacology. But a moment or two is required in imparting a most valuable lesson. But few of our pharmacists attempt to-day to prepare their remedies from the crude drugs, and so our students become deficient in their knowledge of materia medica. Surely he who teaches his clerks those slip-shod methods of making tinctures, syrups, infusions, etc., from fluid extracts is not a true preceptor. His teachings tend to the downfall of pharmacy instead of its elevation. See that your clerks become at least familiar with such officinal crude drugs as enter in the preparations in your store, and those who are fortunate enough not to be in large cities can frequently impress this lesson by pointing out indigenous medicinal plants. Attention should be called to the new medical agents, rare chemicals, etc., their actions, doses and

properties pointed out. Surely, these are as important to both employer and employé, as the newest toilet article and latest product of the perfumer.

These might be called store lessons about little things, but they are the very essence of true pharmacy and those in which the student has a right to expect instruction. It is not sufficient to stifle your conscience with the remark that you have paid for the instruction of the student at the College of Pharmacy. This is practical information which cannot be acquired entirely from the college lecture courses, but which is valuable not only to the clerk, but equally so to the proprietor, as it is necessary to the economical and successful management of his business.

As some one says this will necessitate a great deal of labor on my part to keep up with the new methods and the new ideas. It will necessitate my reading the current literature of pharmacy that I may be posted on the advances made. But this is not our *ideal preceptor*, for he, in the language of the street, "is there already." He considers this knowledge as essential.

Our ideal preceptor is not afraid that he will learn too much. I believe that not only "three-story larnin' is pop'lar now," but certainly more valuable than a single story.

Another subject to which attention has already been called by one of our Professors is the writing of the thesis; but I believe it is a question which will bear repetition. One of the requirements of our college in general with most other similar institutions, is that an original dissertation should be presented by each student. The character of these, while admittedly improving, is yet worthy of great improvement. How can the preceptor aid in such improvement? Our ideal suggests to the student that it is advisable to select a subject early, and refers him to work already done in the same line of investigation. If his student is unable, for want of time or ability, to undertake any original research as would be entailed by, for example, a plant analysis, he suggests that the process for making some preparation could be improved. Possibly he suggests certain simple experiments with various menstrua, or a comparison of methods. This is a valuable field of pharmaceutical work which is generally neglected, and there are even a number of officinal preparations in need of just such simple experimentation carefully performed. While it is desirable that the student should be given the widest liberty in selecting a subject for a thesis, in order to develop the peculiar bent of his mind, the writer has often hoped that the college would maintain some supervision over the subjects selected; to at least decide what are desirable or undesirable subjects for investigation.

I am aware that in writing the above, but one side of the subject has been discussed. The ideal student is perhaps harder to find than the ideal preceptor, but he has not been under discussion to-day. Do not underestimate the value of example and aid to your clerk, nor forget that there is a certain magnetism in example which stimulates others to action.

MINUTES OF THE PHILADELPHIA COLLEGE OF PHARMACY.

PHILADELPHIA, September 28, 1891.

A stated meeting of the College was held this day at o'clock P. M.—Charles Bullock presiding—fifteen members present.

The minute of the previous meeting was read, and on motion, adopted.

The minutes of the Board of Trustees for July, August and September were read, and on motion, approved.

On motion of Mr. Boring, seconded by Mr. Webb, it was resolved that the subject of changing the time of holding the lectures of the College, from evenings to afternoons, be referred to the Board of Trustees for consideration.

The terms of the following Trustees, Edward C. Jones, William E. Krewson, and Dr. Chas. A. Weidemann, expiring with this date, it was made necessary to go into an election, the following names being placed in nomination. Dr. C. A. Weidemann, William E. Krewson, Edward C. Jones and James Buckman. Tellers being appointed, and a vote cast, it was announced that Edward C. Jones, Dr. C. A. Weidemann and Wm. E. Krewson had received the highest number of votes, and they were thereupon declared elected.

Charles Bullock, Wallace Procter and Gustavus Pile were elected members of the Committee on Deceased Members.

A copy of the Hand-Book of Industrial and Organic Chemistry, by Professor Saml. P. Sadtler, was presented to the College by the author, as a donation to the Library, and directed to be received with a vote of thanks.

Meeting hereupon adjourned.

WILLIAM B. THOMPSON, *Secretary.*

MINUTES OF THE PHARMACEUTICAL MEETING.

PHILADELPHIA, October 20, 1891.

The first of the present series of pharmaceutical meetings was held this day. Dr. A. W. Miller was asked to preside; in the absence of Mr. Wiegand J. W. England acted as Secretary.

The minutes of the last meeting were read, and no corrections being required they were approved as read.

Mr. G. M. Beringer presented on behalf of Mr. C. Bullock some very fine crystals of *chrome alum.* Mr. England donated some *molybdenum-glanz* or bisulphide of molybdenum; also some very fine samples of *cinchona barks* of various kinds; to some of them the results of alkaloidal assays were affixed.

Professor Trimble read a paper upon an *Indian food* plant, the material having been furnished by Dr. Havard, Surgeon U. S. A.; the root was particularly rich in cane sugar, containing nearly ten per cent. Prof. Maisch suggested that the root might possibly be suitable for obtaining sugar on a large scale if not too much contaminated with coloring matter, and if the plant could be readily cultivated; the roots of some umbelliferæ, like the carrot, had become quite saccharine under cultivation. Prof. Trimble also described some seeds of *Purshia tridentata,* which are intensely bitter, the bitter principle being not a glucoside. Professor Maisch likened the intensity of the bitter taste to that of strychnine.

Dr. Miller said the effect of cultivation of *Carum Gairdneri* would probably result in the enlarged growth of the tuberous roots and make it desirable as a food product; the result of such cultivation is well illustrated in what is now commonly known as the Irish potato, that in its wild state was a very inferior substance in a food point of view.

Mr. Beringer said that this plant had been classified in two genera before it was placed among the Carums; and the species found in Central California, C. Kelloggii, Gray, was likewise used as a source of food by the Indians.

Fred. W. Haussmann, Ph.G., read a paper upon *Basham's mixture;* his experiments were directed principally to obtaining a more permanent preparation.

Professor Maisch said that solutions of *acetate of iron* had been in the European pharmacopœias for more than a hundred years, and their tendency to spontaneously decompose was well known, being influenced by the amount of acid, by increase of temperature, by direct sunlight and by diffused daylight; hence such solutions should be kept in a cool and dark place.

Prof. Remington said that when introduced into the pharmacopœia, it was well known to be of perishable character, and was expected to be prepared freshly when wanted. Mr. A. B. Taylor had paid a great deal of attention to this preparation, and thought it was best to prepare it frequently, using glycerin in place of the syrup. All the evidence about the preparation seemed to point to the propriety of having the acid somewhat in excess and protecting the solution from heat and light; in this way the proposed formula was, perhaps, quite as good as any that could be given; tincture of orange peel was objectionable in producing a dark colored preparation, while simple syrup and simple elixir together were a better flavoring agent.

A paper on a *color reaction of vanillin* was read by F. X. Moerk, Ph.G., and illustrated with tests showing the delicacy of the test. Professor Remington inquired if a preparation made from vanilla bean itself would give these same reactions, and whether the coumarin was a synthetical product or obtained from some of the natural sources in plants; he also asked if these color reactions could detect vanillin in a fluid extract of vanilla. Experiments in the direction indicated have not been completed.

Mr. Beringer exhibited specimens of the smallest blooming plant known, *Wolffia Columbiana,* which is of the size of a pin's head; it was found in Gloucester County, N. J.

In answer to a question what should be dispensed in an ointment when *Sal sedativum Hombergi* was ordered, Prof. Maisch said that this was the old name for boric acid.

Inquiry was made as to the proper dose of *sulpho-carbolate of zinc*, and it was stated that it would be proper to give from one to three grains.

Mr. England, in reply to a question as to which of the *salicylates of bismuth* was the better for internal use, suggested that the acid salt was the better in typhoid conditions.

Mr. England alluded to the complaints sometimes made about *blistering cerate* failing to act promptly and said it was often due to the faulty mode of applying the plaster; that he had a small direction label printed, instructing the attendant to wash the part to which the blister was to be applied with soap and warm water, wipe dry, then moisten with vinegar and apply the plaster without drying the skin. Mr. Wiegand said he had been in the habit of sending a similar label out with blisters some thirty years ago. Mr. Procter was in the habit of strengthening the blister by brushing the surface of it with a concentrated ethereal tincture of cantharides.

Professor Remington said that some time ago a friend of his had occasion to visit the island of Barbadoes, and he asked him to procure some of juice of the *aloe plant* as grown there; he exhibited a sample and stated that crystals were readily observable in the bottom of the bottle which were undoubtedly Barba-

loin. Dr. Miller said that in veterinary practice Barbadoes aloes is the only one at all used.

Mr. Beringer read a paper upon the *ideal preceptor*, which was well received; and on motion all the papers read were referred to the committee on publication. JOS. W. ENGLAND, *Sec'y.*

REVIEWS.

A Hand-book of Industrial Organic Chemistry, adapted for the use of manufacturers, chemists and all interested in the utilization of organic materials in the industrial arts. By Samuel P. Sadtler, Ph.D., author of "A Hand-book of Chemical Experimentation," etc. Philadelphia: J. B. Lippincott Company. 1891. 8vo. Pp. 519.

The field covered by this work comprises those industries working with raw materials of organic origin, namely, petroleum, fats, volatile oils, resins, sugar, starch, fermentation products, milk, textile fibres, animal tissues, destructive distillation, coloring matters, bleaching, dyeing and textile printing. It was the author's aim within the compass of a moderate sized volume to show in language capable of being understood even by those not specially trained in chemistry the existing conditions of a number of the more important chemical industries. These conditions are explained, in a brief but very lucid and thorough manner, in the different chapters under the following headings: raw materials; processes of manufacture; products; analytical tests and methods; bibliography and statistics. It will be observed that the information imparted by the text is quite comprehensive. It gives the outlines of the processes, tests, etc., with sufficient minuteness to be of practical usefulness to the intelligent reader, and in addition refers those in quest of still greater details to the most available sources. The 127 well executed illustrations which are scattered through the text, are, with few exceptions, representations of apparatus employed in the manufacture of the products treated of, and will materially aid in comprehending the working processes. The diagrams will likewise be appreciated by the student, as they show at a glance the manipulations for carrying out the processes thus illustrated, and the results to be obtained. The appendix contains useful tables explaining the metric system, thermometric equivalents and specific gravity tables; a good index occupies the last 19 pages. The mechanical make-up of the book is in keeping with its intrinsic literary value.

Influence of Heredity in producing disease and degeneracy. The remedy. By Gonzalva C. Smythe, A.M., M.D., of Greencastle, Ind. 8vo. Pp. 24.

The presidential address delivered before the Indiana State Medical Society, June 10, 1891.

The following printed Proceedings of State Pharmaceutical Associations have been received;

Georgia. Sixteenth annual meeting. Pp. 88. See July number, p. 369. Next meeting at Columbus, May 10, 1892; J. P. Turner, Local Secretary.

Nebraska. Tenth annual meeting. Pp. 136. Next meeting at Grand Island, June 7, 1892; F. S. Hazard, Local Secretary.

New Jersey. Twenty-first annual meeting. Pp. 82. See July number,

p. 371. Next meeting at Plainfield, in May next; H. P. Reynolds, Chairman of the Local Committee.

New York Thirteenth annual meeting. Pp. 174. See September number, p. 467. Next meeting at Syracuse in the month of May; J. C. Auchampaugh, Local Secretary.

Oregon. Organization and first annual meeting. Pp. 80. See this Journal, 1890, p. 429, and 1891, p. 417. Next meeting at Salem in June next; J. C. Smith, Local Secretary.

Pennsylvania. Fourteenth annual meeting. Pp. 140. See July number, p. 372. Next meeting at Hotel Shikellimy, Susquehanna Heights, near Sunbury, June 14, 1892; D. M. Krauser, Milton, Assistant Secretary.

Rhode Island. Seventh annual and semi-annual meetings, held January 14, and July 8, 1891. The officers are James O'Hare, president; H. M. Dudley, Woonsocket, vice-president; W. E. Cates, secretary; and A. W. Fenner, Jr., treasurer. The annual meeting is held on the second Wednesday of January, and the semi-annual meeting on the second Wednesday of July.

Texas. Twelfth annual meeting. Pp. 73. See July number, p. 372. Next meeting at Waco, May 10, 1892; H. L. Carleton, Local Secretary.

Gechiedenes der Pharmacie in Nederland. In opdracht van de Nederlandsche Maatschappi ter Bevordering der Pharmacie, bewerkt door U. Stoeder, Oud-Voorzitter en Honorair lid van genoemde Maatschappij, etc. Amsterdam, D. B. Centen. 1891. 8vo. Pp. xvi and 448.

History of Pharmacy in the Netherlands.

This work contains, as an introduction to the special history, a brief sketch of the general history of pharmacy, beginning with the oldest known pharmaceutical document, the celebrated Papyrus Ebers, written about 3,500 years before Christ, and now preserved in the University Library at Leipzig; and with the Aqur Veda Susrutas, the oldest Sanskrit work on Indian materia medica, dating from the eighth century before Christ; and tracing its progress down to modern times. From the history of pharmacy in the Netherlands, we learn that previous to the XIV century, and to some extent for a long time afterwards, the practice of pharmacy was united with that of medicine; from the archives preserved at Hertogenbosch, it is learned that in 1320 Theodorius, the apothecary, conducted a separate establishment for the preparation of medicines; and in 1341, the town of Zwolle had an apothecary store placed in charge of Lambert.

The first book on pharmacy, printed in Holland, was "De groten Herbarius," which made its appearance at Utrecht in 1538, and was followed in 1554 by the "Kruydeboek," of Rembertus Dodenaeus. The first university or "Hoogeschool" was established at Leuven in 1426 (discontinued in 1792), while that of Leiden dates back to 1575, and Utrecht to 1636. After the publication of the pharmacopœias of London (1618, 1627), Augsburg (1622), and Cologne (1628) Nicolaus Fontanus, physician at Amsterdam, published "Institutiones pharmaceuticæ" in 1633, and two years later Dr. Nicolaas Tulp, of the same city, associated with a number of other physicians, undertook the preparation of a pharmacopœia, which received the official sanction of the Senate of Amsterdam and appeared in 1636 under the title "Pharmacopœa Amstelreda-

mensis." With this and the organization of the "Collegium Medicum" at Amsterdam, in 1637, closes the first period of the history of pharmacy in the Netherlands.

The second period dates from 1637 to 1798, and the third period from the latter year to 1851. We have not the space to follow the author even by giving a mere outline of his most interesting work, which carefully records all that is of interest relating to the progress of pharmacy: literature, associations, legislation, education, cinchona culture in Java, etc., and as a matter of course, gives biographical notes of many men prominently connected with the development of pharmacy.

Modern Materia Medica for Pharmacists, Medical Men, and Students. By H. Helbing, F.C.S. Second enlarged edition. 1891: The British and Colonial Druggist, London. Sole agents in the United States: Lehn & Fink, New York. 12mo. pp. 115. Price, cloth, 75 cents.

This work is confined to synthetic remedies, with the exception of eucalyptol, myrtol, and a few other similar compounds which are considered in the appendix. The remedies are arranged in alphabetical order, beginning with acetanilide and terminating with urethane. Under each head are given the various synonyms, the chemical composition, the mode of preparation, the physical and chemical properties, with tests of identity and purity, and finally the medicinal uses and doses. Derivatives which are, apparently, of less importance as medicinal agents, are briefly mentioned at the end of the paragraphs treating of the more important remedies, to which they are chemically related; in the same place are also enumerated various mixtures which under special names have been put forward by some enterprising firms. The author states that in dealing with the "medicinal uses" it has been a constant endeavor to indicate its therapeutical importance, where possible, rather by a careful balancing of the whole literature of the subject, than by a detailed quotation of individual experiences and conclusions.

The work will prove to be very useful to those for whose use it is intended, the information being comprehensive and reliable, and easily available, owing to the arrangement, and by means of an index, which includes also all compounds not placed in alphabetical order.

The Apothecary. Published by Illinois College of Pharmacy. Oscar Oldberg, Editor, Chicago. 8vo. Issued quarterly. Price, $1.

The first number of this periodical, issued in August, contains 48 pages, and furnishes, among other information, three papers by Professors Oldberg, Bastin and Long. It is intended to contain only original articles, editorial notes, and book reviews, and not to give space to discussion of trade interests, or to reprints or abstracts from other journals.

The Climatologist. Edited by J. M. Keating, M.D., F. A. Packard, M.D., and C. F. Gardiner, M.D. Philadelphia: W. B. Saunders. Price, $2.

This new monthly, containing 82 pages of text, is devoted to the relation of climate, mineral springs, diet, preventive medicine, race, occupation, life insurance and sanitary science to disease. The field intended to be cultivated is extensive, and the six original papers published in the first (August) number show that it is full of interest.

Eighth Annual Report of the Board of Control of the State Agricultural Experiment Station at Amherst, Mass. Boston: 1891. 8vo. pp. 325.

No. 33 of the Public Documents of Massachusetts. The station is under the directorship of Prof. C. A. Goessmann; J. E. Humphrey, S.B., is the mycologist.

VARIETIES.

Hydrofluoric acid, kept in gutta-percha bottles, becomes contaminated with other compounds, chiefly iron. R. Benedikt (*Chemiker Ztg.*, June 24, 1891, p. 881), recommends bottles of hard rubber (vulcanite) as being very serviceable for the purpose. 25 cc. of an acid kept in such a bottle for over a year, left a residue amounting to only 0·0005 gm. Hydrofluosilicic acid can likewise be kept in such bottles.

Death by antikamnia.—Dr. E. P. Easley, New Albany, Ind., has communicated the following to the *Amer. Practitioner and News*, Louisville, Sept. 12, 1891:

"On the 6th of last April, Mrs. Z., a stout, robust woman, weighing one hundred and sixty-five pounds, twenty-two years old, took, by mistake, for a slight headache, twenty-four grains of antikamnia. In a few minutes she became wildly delirious, then unconscious, and died in ten hours after swallowing the medicine. A careful, methodical *post-mortem* examination failed to discover any lesion, death being the result of the action of the drug alone. The greater portion of her body was cyanosed. The membranes of the brain were of a sky-blue color, as were all the fibrous structures wherever found. The right ventricle was filled with clotted blood very much bleached."

For the results of analyses of this mixture, see Amer. Jour. Phar., April, p. 181, and June, p. 290.

For preparing tincture of iodine, Vauthier recommends placing the iodine upon a glass sieve and suspending this in the alcohol contained in a colored glass bottle, in order to avoid the influence of heat, light and organic matter, whereby hydriodic acid would be formed; moreover, the tincture should not be kept on hand for a long time.—*Pet. Mon. de la Phar.*, June. See also this Journal, April, p. 195.

Hydrastis canadensis has been found beneficial in night sweats of phthisis by Dr. Cruse (*Med. Neuigk.*, July 11); he gives the fluid extract in the evening, commencing with thirty drops and increasing the dose if necessary.

Microcidin is a new antiseptic, recommended by Prof. Berlioz, of Grenoble. Extreme solubility, harmlessness and rapidity of action are claimed for it. It is a compound of naphthol and soda, is neither poisonous nor irritant, and has the form of a grayish-white powder. Its solution of three grams per liter is very slightly colored, and does not stain either the hands or bandage.—*Science.*

Safran Algeri (*extra*), a French substitute for saffron, is an orange-yellow powder of faint saffron odor, soluble in water, producing a solution identical in color with one made from pure saffron; under the microscope small quantities of powdered saffron can be recognized. It is a mixture of Martius-yellow (dinitro-naphthol), and tropæolin 000 N.2, with a small quantity of saffron.

Lolium temulentum, known as *darnel*, contains, according to Dr. P. Antze (*Centralbl. f. d. ges. Ther.*, May, 1891), a volatile alkaloid, *loliine*, and a solid base, *temulentine;* the latter is probably a decomposition product of *temulentic acid*, for which he has determined the formula $C_{12}H_{42}NO_{19}$. The poisonous properties seem to reside in the acid and in temulentine, while after loliine has been given there is no reduction of temperature and no staggering.

Pistoia Powder.—There is a powder made in a convent near Pistoia, Italy, which is used very extensively as a protective against gout. The following is said by Mr. Chastaing to be its composition :

℞ Bryonia Root, Gentian, Chamomile,	āā gm. x
Colchicum Root,	gm. xx
Betony,	gm. j

This is made into 365 powders, one of which is taken each day of the year in a full glass of cold or hot water.—*Quart. Therap. Review.*

Menthol in Hay Fever.—Dr. Lennox Wainwright (*British Medical Journal*, July 18, 1891) has found *menthol*, mixed with carbonate of ammonium and used as smelling salts, the most useful remedy in hay fever. The patients say that all irritability disappears, and in many cases they get no return of the symptoms.

Naphthalin according to Dr. Mirovich (*The Lancet*), is an admirable remedy for ascarides and for tape worm, and is much more certain and far less poisonous than most of the other vermifuges. For adults he prescribes a fifteen-grain powder, to be followed immediately by two ounces of castor oil. For two days before this dose the patient is directed to live on salt, acid and highly-seasoned food, then the naphthalin is given fasting early the following morning. In all the cases the whole tænia was expelled with its head after the first dose. —See also *Amer. Jour. Phar.*, 1887, p. 128, and 1890, p. 407.

Randia dumentorum is regarded by Sir James Sawyer (*The Lancet*, 1891, p. 656) as a useful addition to our repertory of nervine antispasmodics and cardiac excitants. The active principle of the unripe fruit is a saponin-like body. An ethereal tincture is recommended to be made of one part of the drug to five parts of spirit of ether.

Common Thyme, which was recommended in whooping-cough three or four years ago by Dr. S. B. Johnson, is regarded by Dr. Neovius (*The Lancet*, May 9, 1891), as almost worthy the title of a specific, which, if given early and constantly, invariably cuts short the disease in a fortnight, the symptoms generally vanishing in two or three days. He gives from one ounce and a half to six ounces per diem, combined with a little marsh-mallow syrup. He never saw any undesirable effect produced, except slight diarrhœa. It is important that the drug should be used quite fresh.